



# COMPUTERWORLD

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## TEXANS FACE OFF OVER UCITA BILL

*Passage of measure  
this year is unlikely*

BY PATRICK THIBODEAU

A Texas-size wrangle over the proposed Uniform Computer Information Transactions Act — one that pits large corporate users against a group of major technology vendors — is under way in the Lone Star State. It could become a key showdown for the controversial legislation to regulate software licensing contracts.

The legislation, known informally as UCITA, was approved relatively easily last year in two states: Virginia and Maryland. But things are different in Texas, where oppo-

## In Motion

UCITA has been sent to all 50 states for adoption, but it could take years for state legislatures to act on it.

State approvals so far: Maryland and Virginia

Where UCITA is on the docket: Texas, Maine and Arizona; expected to be taken up soon in Florida

Outlook: UCITA can be introduced in state legislatures at almost any time; the list of active states can change quickly

nents are moving aggressively to prevent the state legislature from passing the measure.

The opposition has "definitely caught on," said Val Perkins, an attorney and lobbyist. UCITA, page 77

## GLOBAL SUPPLY CHAINS RIFE WITH CHALLENGES

*Software customization tops list — once  
partners embrace electronic business*

BY MARC L. SONGINI  
CANCUN, MEXICO

Varying tax and customs rules, multiple currencies and numerous transportation problems are among the challenges of linking a transnational supply chain. But first, U.S. companies have to get their suppliers online.

Mexico, for example, is far behind the U.S. in Internet usage, and online marketplaces are almost nonexistent there.

Even getting everyone in Mexico to agree on a collaborative process is difficult, said Francisco Espinosa, deputy director for quality systems at Coca-Cola de Mexico, a Mexico City-based subsidiary of The Coca-Cola Co. in Atlanta.

"The silo mentality is very common in Mexico," said Espinosa, sharing his experiences at the Supply Chain World Latin America conference here last week. "People

are not used to a networked environment. Culturally, it is quite a big challenge." Nevertheless, the beverage company plans to establish close connections with its supply-chain partners and is rolling out SAP AG's Advanced Planner and Optimizer suite of supply-chain applications as part of Supply Chains, page 16

## CROSSING BORDERS

## START-UP MAKES DOMAIN WAVES

*Critics: New.net's 20  
domains create chaos*

BY TODD R. WEISS

Critics of the glacial pace of domain name creation are worried that the approach taken last week by start-up New.net Inc. will only make the situation worse.

Pasadena, Calif.-based New.net is offering Web site registrations for \$25 per year under its domains, which include the likes of .inc, .shop and .travel. Officials at New.net said that companies and Internet users want a wider choice of domains and that the Internet Corporation for Assigned Names and Numbers is taking too long to create new ones as part of its management of the official Domain Name System.

However, the start-up's move doesn't sit well with David Maher, vice president of public policy at the nonprofit Internet Society, who said he's concerned about the potential impact of working outside the bounds of ICANN.

"It sure as hell is going to create a lot of problems in the whole domain naming system," because no one will oversee Domain Names, page 16

## THE RISING TIDE OF IMMIGRATION

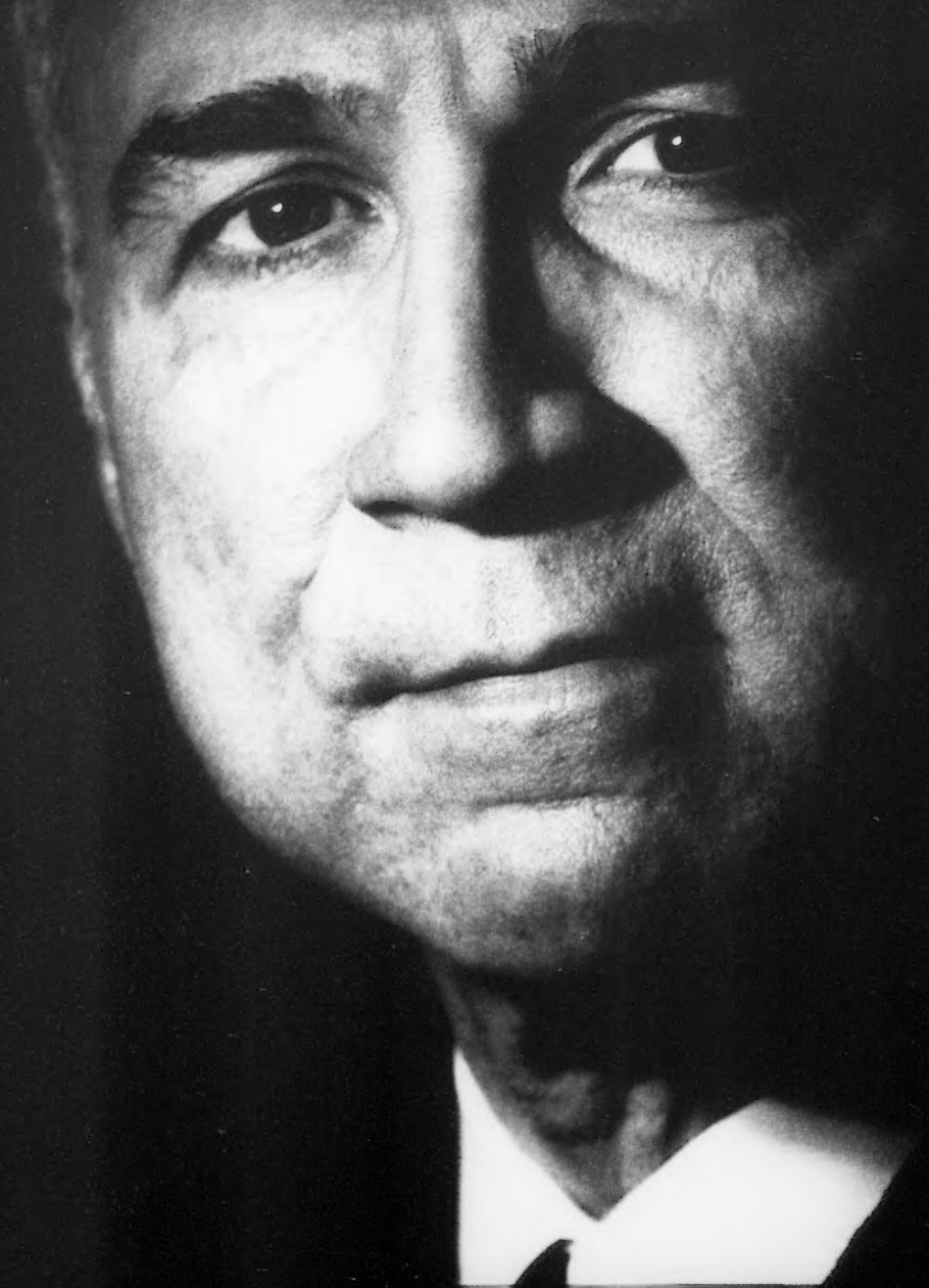
AN IN-DEPTH LOOK AT THE GOVERNMENT'S H-1B program, which lets foreign workers fill specialized jobs in the U.S., shows that H-1B visa holders could make up 10% of the IT workforce by 2004. Whether that's a good thing or a bad thing depends on whether you're an employer, a U.S. programmer feeling threatened or an Indian software engineer who sees America as the land of opportunity.

Stories begin on page 42.



LEW WHEELER, CEO of a Pittsburgh IT consulting firm, plans to hire 700 foreign-born workers this year to cope with the IT labor shortage.


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## CUSTOM CARS

New technologies will personalize vehicles, make them more secure and offer a world of information on the road. Page 60



## LEARN TO INSPIRE

Good pay and benefits can surely light a fire under your IT staffers, but it also takes inspiration and communication, as IT leaders like Roger Gray (right), CIO of PG&E, can tell you. Page 50



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- 8 **SECURITY EXPERTS** agree that a common set of criteria is needed to evaluate the security of commercial IT products.
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[www.computerworld.com/roi](http://www.computerworld.com/roi)
- Have an opinion on the H-1B visa program? Post your message on our H-1B **interactive discussion forum** at [www.computerworld.com/forums](http://www.computerworld.com/forums)
- And for latest coverage of the visa issue, go to our **Focus on H-1B Visas**: [www.computerworld.com/h1b](http://www.computerworld.com/h1b)
- Metases analyst **Jody C. Patilla** discusses the security impact of the proposed Health Insurance Portability and Accountability Act in our **Security Community**.  
[www.computerworld.com/security](http://www.computerworld.com/security)
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## AT DEADLINE

### Cisco to Reduce Jobs

Networking giant Cisco Systems Inc. confirmed on Friday that it will reduce its workforce of 48,000 by as many as 8,000 workers. Chairman and CEO John Chambers said the cuts will include 2,500 to 3,000 temporary contract workers and 3,000 to 5,000 regular employees. "We're taking these steps because of the continuing slowdown in the U.S. economy and initial signs of a slowdown expanding to other parts of the world," Chambers said.

## EU Reps to Raise Spy Concerns in D.C.

European Union representatives are planning a visit to Washington in May to meet U.S. legislators and groups interested in the so-called Echelon global telecommunications-tapping network, European Parliament Vice President Gerhard Schmid said Friday. The delegates plan to express their concern that the CIA is helping a division of the U.S. Department of Commerce assist U.S. companies abroad.

## Loudcloud Opens Up On Wall Street

Loudcloud Inc., the e-commerce hosting and site development company founded by Marc Andreessen, went public Friday with an initial public stock offering of somewhat lower valuation than previously expected. Opening on a downdraft near midday, Loudcloud shares climbed 25 cents from the \$6 issue price on volume of 2.9 million shares on the first uptick. Loudcloud trades under the ticker symbol LDCL.

## Copper Mountain Cuts 25% of Workforce

Digital Subscriber Line equipment manufacturer Copper Mountain Networks Inc. said last week that it was shuffling executives and immediately eliminating 25% of its 450-person workforce. The Palo Alto, Calif.-based firm attributed its problems to a faltering domestic economy and continued turbulence in its core market, competitive local exchange carriers.

# Compaq Wins Australian Supercomputing Contract After Sun System Gets the Boot

*Customer says Sun failed acceptance tests; Sun claims it simply missed testing deadline*

BY JAIKUMAR VIJAYAN

A major research organization in Australia confirmed last week that it terminated a \$5 million supercomputer contract with Sun Microsystems Inc. and awarded the deal to Compaq Computer Corp. instead. The research organization said Sun's high-end servers failed acceptance tests.

In mid-February, the Australian Partnership for Advanced Computing (APAC) announced that it had selected Compaq to provide technology for large-scale scientific and engineering research in areas such as molecular modeling and fluid dynamics.

Under the three-year deal, Compaq will supply APAC with a 480-processor AlphaServer SC system that, when fully installed, will rank among the most powerful systems in Australia, according to APAC.

APAC is a partnership involving most Australian universities and CSIRO Australia, the country's largest scientific and industrial research agency.

APAC's decision to use Compaq equipment came after an earlier plan to use Sun servers was reversed because the systems failed to meet acceptable standards for the project, said John O'Callaghan, the Canberra-based executive director of APAC, in an e-mail.

"The acceptance tests were done as part of the installation of the system — and were a condition of payment. The contract with Sun was terminated because their system [four E10000s] failed the acceptance tests," O'Callaghan said, without specifying the nature of the failure.

### Bad Timing?

The contract termination has raised some speculation about whether it had anything to do with a memory-related reliability issue Sun has been quietly battling on its high-end servers for the past two years.

The defect has caused frequent reboots and server crashes at dozens of Sun sites.

But in an e-mailed response to a request for comment last week, a Sun spokesman dismissed the matter as a timing issue.

"We were unable, in this instance, to complete the acceptance tests within an acceptable period of time," the spokesman said. "Given that, APAC decided to reissue the [request for proposals]. In fact, we were invited to rebid but declined because our product schedules did not align with

those required by APAC."

Sun won the original \$5 million, three-year APAC contract in August. It called for the company to commission a system in September that comprised a cluster of four E10000 servers.

The deal called for the system to be upgraded to one based on Sun's new UltraSPARC III processor technology by the middle of next year.

### Lost Opportunity

In a statement made at that time, Sun claimed that the installation would set "unprecedented standards in total computing power for Australia."

The company also claimed that the complexity of the computations involved in APAC's work gave it an "excel-

## Sundown

*A snapshot of Compaq's three-year deal with APAC:*

- Compaq will commission a 480-processor AlphaServer SC supercomputer with 1-GHz chips.
- The final disk capacity will be about 10TB.
- The initial system will be installed next month.
- Full implementation is expected by October.

lent opportunity to demonstrate the robustness and scalability of the Sun system." The deal was scrapped by early November, however, and the four Sun E10000 servers that had been installed were returned.

"After the termination, we went back to the market with a request for proposal," O'Callaghan said. "Compaq was awarded the contract based on a number of criteria, including price/performance." ■

# FBI Investigating Eastern European Hacker Break-ins

*As many as 1 million credit cards may have been affected*

BY DAN VERTON

The FBI last week disclosed that it has launched 40 separate investigations into alleged hacking incidents by Eastern European organized crime groups that are believed to have stolen more than 1 million credit card numbers from U.S. e-commerce Web sites.

A spokeswoman for the FBI's National Infrastructure Protection Center (NIPC) said the break-ins have occurred in 20 U.S. states and are thought to be part of a systematic effort by crime syndicates in Russia and the Ukraine to break into vulnerable Windows NT Web servers. Estimated financial losses since the NIPC issued an initial warning about the threat in December total as much as hundreds of thousands of dollars, she said.

The agency, which is based at

FBI headquarters in Washington, released an advisory last week saying the hacking activities are continuing. The advisory reiterated a recommendation that systems administrators check NT-based servers to make sure patches designed to fix several known security holes have been installed.

The NIPC spokeswoman described the new advisory as "a public-service announcement" meant to urge companies to download the operating system patches made available by Microsoft Corp.

### Known Vulnerabilities

"These [organized crime] groups have hit these sites using known vulnerabilities for months now, and people are not heeding the warnings," the spokeswoman said. Microsoft discovered and patched many of the vulnerabilities in Windows NT as early as 1998. But until companies take the appropriate steps, the spokeswoman added, the attacks are "not going to stop."

Scott Christie, an assistant

attorney at the U.S. Attorney's Office in the District of New Jersey, said investigators have identified several hacker groups that they believe are responsible for the incidents.

"We have a very good sense of who is involved. It's national in scope and at a point that we all felt it was appropriate to let a wider audience know what is going on," Christie said, characterizing the threat as a "serious impediment to public confidence in e-commerce."

The hacker groups target customer data — specifically, credit card information — and then attempt to extort a security service contract from the affected company, according to the FBI. The attacks often continue for several months before the victim discovers the intrusion.

The SANS Institute, a security research organization in Bethesda, Md., said its Center for Internet Security plans to release a software tool that can be used to check NT servers for the vulnerabilities and to look for files the FBI has found on many compromised systems.

The center's tools are usually limited to its members, but SANS said this one will be made available on a widespread basis "because of the importance of this problem." ■

# Exchanges Racing to Add Product Design Collaboration

*Users says collaborative commerce systems help speed development, trim design costs*

BY LEE COPELAND GLADWIN

SOME business-to-business exchange participants are gearing up for B2B's next frontier: collaborative commerce.

Collaborative commerce — which involves sharing product design and engineering documents — will improve operations, cut costs and save time, users said.

Covisint LLC, the automotive procurement exchange launched one year ago by the Big Three automakers, said it wants to augment its online transaction-oriented quotation process to include collaborative product development.

Southfield, Mich.-based Covisint is building a collaborative design portal that's expected to trim vehicle development times from 42 months down to 12 to 18 months and cut about \$3.5 million in paper-based costs from the design process, Covisint spokesman Dan Jankowski said at a conference hosted by Cambridge, Mass.-based Giga Information Group Inc.

But the need for collaborative commerce goes beyond the swapping of documents and drawings between buyers and sellers. After a supplier or contractor wins a bid, these

systems enable changes in product development and design to be communicated to all involved parties.

## Anticipated Benefits

Aerospace and defense business-to-business exchange Exostar LLC in Reston, Va., is in the midst of adding collaborative product design capabilities to the exchange's trading platform, using Windchill ProjectLink software by Needham, Mass.-based Parametric Technology Corp.

An Exostar founder, defense

giant Lockheed Martin Corp. also said that it wants to use Windchill to revamp its supply-chain operations to speed up the time it takes to develop projects, which means making the collaborative software accessible internally and to potential customers and suppliers after a bid has been won.

"This type of collaboration will speed development by some 20% to 30%, and that's being conservative," said Tony Ellis, managing director of commercial systems engineering at Bethesda, Md.-based Lockheed Martin.

To speed up the deployment of collaborative commerce,

Lockheed Martin has spearheaded a systems integration unit to install these types of systems for customers and small suppliers, Ellis said.

One of Covisint's founders, DaimlerChrysler AG in Stuttgart, Germany, will launch its first large pilot of networked design engineering, called FastCar, this month.

Putting collaborative systems in place is of growing importance as increasing numbers of companies outsource products and services, but the automotive industry has been slow to take on the IT challenge, said Gary Dilts, DaimlerChrysler's senior vice president of U.S. e-commerce.

## MORE ONLINE

For more information about collaborative commerce, visit our e-commerce page: [www.computerworld.com/e-commerce](http://www.computerworld.com/e-commerce)

# Economic Downturn Impacting IT Staffs

*Many projects will survive, but hiring strategies changing*

BY LEE COPELAND GLADWIN  
SAN DIEGO

In the face of an economic downturn this year, many IT managers say their staffs are protected islands within increasingly cost-conscious corporations. Even so, they're tweaking staffing plans, initiatives and investments to reflect looming economic concerns.

Microprocessor and memory-chip maker Nu Horizons Electronics Corp. is forging ahead with new projects, such as implementing initiatives from the industry consortium RosettaNet and building an online component design system that integrates with supplier portals.

Still, Alon Sanie, business-to-business and Internet development manager at Nu Horizons in Melville, N.Y., said economic concerns in the PC market have put downward pressure on IT salaries.

"We're going to be more

conservative on hiring, but there will be no cancellation of projects," said Sanie. "We'll hire more beginning-level programmers and less of the high-end people that command higher salaries. It's cheaper to train them on the exact systems we need and then get them up to speed quickly."

The fear of a recession is affecting IT spending and staffing plans, said users attending the Applications Strategy Conference here last week hosted by Giga Information Group Inc. It also increases the pressure for quicker payback from IT initiatives.

"There is some hesitation, but not necessarily a downsizing of IT," said Randy Heffner, an analyst at Cambridge, Mass.-based Giga. "Decisions are being taken more carefully and stringently."

"We provide a commodity, and the price is set by the marketplace, so the one area that we can control and manage is our cost structure," said Brian Neely, chief technology architect at Phoenix-based Phelps Dodge Corp., the world's second-largest copper mining company.

As a result, Phelps Dodge intends to focus on existing long-term projects such as Quadrem, the business-to-business exchange in El Segundo, Calif., that it helped launch in November. But the company plans to keep its IT hiring "static," Neely said.

Rather than bring in new hires to expand the collaborative aspects of the exchange, Neely will move IT staffers off of less-strategic application development projects.

"We have some projects that have been very tactical that are finishing or getting implementation rolled out, so there will be resources that will be freed up that we'll use," he said.

## Raising the Stakes

Some corporations are upping the ante on IT initiatives, if not staffing, in the hopes that these strategic bets will provide big payoffs in the form of staff cuts elsewhere during the economic downturn.

San Francisco-based Wells Fargo & Co., for example, is forging ahead with an aggressive IT strategy that includes infusing its business units with new workflow functions and

"It's an industry malady that is going to change as network technology allows us to talk to a community about a decision rather than using point-to-point communications," said Dilts. "This is going to let us look into and understand what the impact of decisions are in the supply chain."

It's not only the largest manufacturers that are implementing collaborative commerce initiatives. Internet Corp., a \$1 billion maker of automotive castings in Troy, Mich., last week launched a collaborative design Web site using ActiveProject software from Framework Technologies Corp. in Burlington, Mass.

Russ Blaesing, director of automotive business development at Framework, said the software will track incoming quotes from customers through the various stages of development, as well as all of the drawings and specifications that accompany the proposals. ■

## No Recession Here

Rob Kogan, vice president of MIS at Nautilus Insurance Co., a general liability and property insurance firm in Scottsdale, Ariz., said his IT budget has increased 300% over last year's.

"We just hired two more [programmers]," said Kogan, who will use the budget increase to expand electronic insurance distribution systems, back-office processing and customer profiling capabilities.

expanding its Web banking offerings.

IT projects such as these take on renewed importance in the face of an economic downturn, said Keith Joseph, retail technologies architect at Wells Fargo, because their goal is to handle increased volume with the same number of staff members or fewer.

Wells Fargo launched an account aggregation service last week called One Look, which allows its 2.6 million Internet banking customers to view balances from multiple institutions, pay bills and transfer funds.

It has also put workflow processes into place that redesign labor and paper-intensive processes, Joseph said. ■

## B2B'S SEQUEL:

### Collaborative Commerce

- More tightly integrates processes
- Allows product design and development to be coordinated before and after transactions
- Requires robust networks and bandwidth to share design specifications and drawings

## Wireless Ads Show Promise in Colorado Trial Run

*Cell-phone ads net one retailer 100% more sales than a print campaign would*

BY MATT HAMBLIN

A wireless advertising trial-run that involved sending ads to 1,000 users of mobile computing devices in Boulder, Colo., has buoyed the hopes of some companies eager to reach potential buyers with the new technology.

The study was conducted by Skygo Inc. in Redwood City, Calif., during a four-month period that ended Jan. 31, and results were released a week ago. About 50 advertisers took part in the test process, pushing ads several times each day on cell phones made by Stockholm-based LM Ericsson Telephone Co. via Redmond, Wash.-based AT&T Wireless Group's network.

Ads offered goods and services, including movie tickets, sporting goods and restaurant information as well as trivia games designed to enhance the brand-name recognition of the company involved.

After outdoor gear-rental and sales company GearDirect.com LLC took part in the study, CEO John Siewierski said, about 2% of the users in the study made purchases from the Boulder-based firm. GearDirect.com has two brick-and-mortar stores as well as online and catalog sales.

"I'm intrigued by wireless advertising, and it truly has my interest," Siewierski said. The response rate meant that wireless users bought at least \$2,400 in goods from GearDirect.com, about twice what he would have expected from a print advertising campaign.

### Boosting Web Traffic

An additional 50% of the 1,000-user sample visited the GearDirect.com Web site from a wired-world connection, according to Skygo's surveys. Siewierski said GearDirect executives "know we got sales out of that."

San Francisco-based Visa U.S.A. Inc. also participated in the study, verifying payments for movie tickets from cellular phones with credit card information stored on a secure

server, according to Annette Merriman, director of technology at the company's e-Visa division.

E-Visa officials said they were encouraged that 37% of

the 1,000 participants agreed to enter credit card account information at the start of the study. By doing so, participants became eligible to purchase movie tickets online wirelessly by typing in a personal identification number to authorize the credit card payment, Merriman said. When tickets are purchased this way, users just

show their Visa cards when they arrive at the theater to get the tickets.

"The study was very exciting for Visa, because for the first time, it allowed Visa to learn about consumers in the direct market," Merriman said.

"People were actually making purchases from the device [and showed] interest in mak-

ing purchases from mobile phones," she added.

Skygo officials said the focus of the ads and the type of ads made a difference to users. Ads featuring interactive trivia questions generated the highest rate of response, followed by ads that allowed consumers to participate in polls, they said.

In all, about 500,000 ad messages were sent using 565 unique advertising campaigns. About 64% of the ads were opened by users. ■

## Common Ground Sought on IT Security Requirements

*Private sector urges government to expand criteria to cover needs of large enterprises*

BY DAN VERTON  
INDIANAPOLIS

**G**OVERNMENT security experts and private sector IT vendors last week agreed that a common set of criteria is needed to help test and evaluate the security of commercial IT products.

However, few of the attendees at the National Information Assurance Partnership's (NIAP) first Government-Industry IT Security Forum here were able to agree on how best to achieve that goal.

"The greatest challenge facing us today as consumers... is that we have access to an increasing number of IT products with different capabilities and limitations," said Ron Ross, director of the NIAP, a Washington-based government-industry consortium led by the National Institute of Standards and Technology and the National Security Agency (NSA). Consequently, IT vendors "must have a better understanding of consumer requirements in the security of their IT products, [and] we must know what we want," he said.

The NIAP was officially chartered in 1997, after the first version of the Common Criteria (CC) was introduced in 1996 as a follow-on to an effort started in the 1980s by the NSA with the Trusted Computer System Evaluation Criteria,

better known as the Orange Book (see box). That initiative was aimed at creating a common set of criteria for evaluating IT products for security.

But some summit attendees said there are significant shortcomings in the current version of the CC — Version 2.1 — that diminish its value to large enterprises.

They urged NIAP officials to extend the concept of the CC beyond individual products to address today's large-scale network environments.

The CC "wasn't set up for what we wanted to do," said

Marshall Potter, chief scientist at the Federal Aviation Administration (FAA). That's because the CC doesn't address the "system of systems approach" being followed by the FAA, he said. "Right now, it doesn't meet our needs," he explained.

One of the most passionate pleas for the NIAP to overhaul the CC came from Joe Weiss, technical manager of the Enterprise Infrastructure Security Program at the Electric Power Research Institute in Palo Alto, Calif.

Cultural differences and the belief that security is simply a problem for corporate IT departments has created significant hurdles for large industrial organizations, he said.

"The IT organization does

not own any of these large industrial pieces of equipment," said Weiss, referring to the various industrial systems that run the nation's electric power grid but rely on computers for their control and management. "Somehow, we have to break through that chasm where neither [the IT organizations nor the industrial organizations have] wanted to talk before."

Weiss also implored the NIAP to recognize the need for the CC to be extended to large-scale organizations and networks.

One of the biggest problems now is that security specifications are too often tied to one product or the deployment of a product, said Robert Williamson, director of Science Applications International Corp.'s Common Criteria Testing Laboratory in Columbia, Md.

IT product vendors also raised concerns with the CC, arguing that the government needs to take a more active leadership role in promoting and mandating the use of certified products.

"We're putting vault doors on straw houses, and that's not the right approach to take," said Robin Roberts, security certifications product manager at Cisco Systems Inc. in San Jose. "I've got a business case to make. Right now, [government certifications are] expensive to obtain and... an interminable process to endure." ■

### Origins of the Common Criteria

**1985** Trusted Computer System Evaluation Criteria (TCSEC), the "Orange Book" (U.S.)

**1991** Information Technology Security Evaluation Criteria (European Commission Members)

**1993** Canadian Trusted Computer Product Evaluation Criteria (CTCPEC) Version 3.0 published as a combination of the ITSEC and TCSEC approaches

**1993** Draft Federal Criteria for Information Technology Security Version 1.0 (U.S.)

**1998** Mutual recognition agreement signed by the U.S., Canada, France, Germany and the U.K. for Common Criteria-based evaluations

### COMMON CRITERIA 2001 PROJECTS

- Health Care Security Forum
- Smart Card Security Forum
- Common Criteria Toolbox Forum
- Automated Security Testing
- System Certification and Accreditation Research

### MOREONLINE

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## BRIEFS

## New Virus Runs Wild

A new Trojan horse galloped in last week, promising a glimpse of a naked woman in an e-mail attachment. The new virus, NakedWife.exe or W32/Naked, infects a user's computer when the attachment is opened. The Naked Wife virus then propagates, like last month's Anna Kournikova virus, by attaching itself to all of the addresses in a Microsoft Outlook address book. Unlike the Kournikova virus, however, Naked Wife also contains code that can erase files, which makes it impossible to reboot the afflicted PC.

## Hacker Breaks Into Online Book Site

BiblioFind.com, an online marketplace for rare and hard-to-find books that's owned by Amazon.com Inc., last week said a malicious hacker had broken into its Web site, compromising the security of the customer credit card information processed on its servers between October and February. A spokesman for Waltham, Mass.-based BiblioFind said that although about 98,000 users had been affected, the company had no information to suggest that any credit card data had been misused.

## CyberCash Files for Bankruptcy Protection

Electronic payments company CyberCash Inc. last week said it was unable to raise the money it needed to merge with Network 1 Financial Corp. as previously planned. Instead, Reston, Va.-based CyberCash has filed for Chapter 11 bankruptcy protection and may be bought by Network 1 Financial, a McLean, Va., Internet payment services company.

## Intel to Slash Jobs

Intel Corp. last week warned that first-quarter revenue will be below expectations and announced plans to reduce its workforce by about 6%. The chip giant said it will cut 5,000 of its 90,000 jobs during the next nine months as part of an effort to offset the lag in revenue, which Intel attributed primarily to weakness in demand for its microprocessors used in servers.

## Amdahl Expands Tiered Pricing Model

*Firm says move will make it cheaper for users to upgrade mainframes*

BY JAIKUMAR VIJAYAN

**A**MDAHL Software last week announced a new pricing structure under which users of its enterprise operating system software will get progressively larger discounts as their systems get bigger, according to the company.

Under the Sunnyvale, Calif.-based company's expanded incremental pricing model, license costs for Amdahl's mainframe software will be reduced by an average of 25% for the largest enterprise users, while smaller users should see cuts ranging from 15% to 21%, said Mona Hogue, a product manager at Amdahl.

The software company is a spin-off from mainframe vendor Amdahl Corp., which exited the hardware business last year. Amdahl has been split into three divisions: the software group, a technology group and a service company.

The price reductions apply to Amdahl's popular Transparent Data Migration Facility (TDMF) software for storage management and replication and to its business continuity products.

Amdahl initially charged a flat fee for these products, but the company has used a three-tiered model—based on IBM's incremental millions of service units (MSU) pricing scheme—for the past two years.

With last week's announcement, Amdahl has added two more pricing tiers to accommodate the increasingly large mainframes that are becoming available today, Hogue added.

Under the new model, Amdahl customers with an average of 45 MSUs or less—those at the base and Level A tiers—should see a 15% reduction in prices. Similarly, users with 46 to 315 MSUs should find their Amdahl software costs reduced by as much as 21%. Users with more than 315 MSUs will see an average reduction of 25%.

Amdahl's move is similar to ones made recently by other mainframe software vendors to spur top-end sales, said Mike Kahn, an analyst at The Clipper Group in Wellesley, Mass. But it isn't clear how IBM's planned introduction later this year of a new license

manager technology that enables usage-based software licensing will impact Amdahl's scheme, he added.

Amdahl needs to take actions such as these to continue selling its software, said David Floyer, an analyst at IT Centrix Inc., a consultancy in Mountain View, Calif.

"The purpose of any licensing move like this is to make sure that you maintain revenues from your existing customers," he said. ▀

## Pricing Structure

Amdahl's new pricing structure for its TDMF software is identical to IBM's, with price reductions averaging 15% across the two lowest levels and averaging as much as 34% for highest level users.

Base charge:	3 MSUs
Level A:	4-45 MSUs
Level B:	46-175 MSUs
Level C:	176-315 MSUs
Level D:	Above 315 MSUs

## Former 3Com Enterprise Users Move On

*But some still puzzled by vendor's exit from enterprise networking*

BY JAMES COPE

"Betrayed." "Devastated." "Abandoned." Those were some of the words networking systems managers used to describe how they felt when 3Com Corp. pulled the plug on its large enterprise networking business. Now, one year later, they're recovered from the shock, but they're still shaking their heads.

Virgil Palmer, director of global communications and network services at Air Products and Chemicals Inc. in Allentown, Pa., said his company had a relationship with 3Com that went back five years. Then, "out of the blue, 3Com essentially said, 'We're abandoning our corporate customers,'" Palmer said.

Users' surprise when Santa Clara, Calif.-based 3Com dropped its CoreBuilder and NetBuilder family of LAN and

WAN switches last March was understandable, said Michael Speyer, an analyst at The Yankee Group in Boston.

After all, he said, only six months earlier at its international user conference in Chicago, 3Com had promised renewed focus on its corporate networking business by spinning off its Palm business as a separate company.

Two weeks later, IT managers like Edward Dedic, technology director at Hudsonville Public Schools in Hudsonville, Mich., got the disturbing news. Dedic had used 3Com equipment to build an enterprise network connecting 14 buildings. And he had a CoreBuilder 9000 stowed in his dealer's warehouse that was ready for installation during his school system's spring break.

Fortunately, Dedic hadn't yet paid for the CoreBuilder, and he was able to return it to 3Com. He ended up migrating to products from Foundry Networks Inc. in San Jose. Dedic said Foundry quickly configured and installed a switch, en-

abling him to get his network up and running before the students returned.

What ultimately saved some users was that 3Com had inked an agreement with Santa Clara, Calif.-based Extreme Networks Inc. to pick up its CoreBuilder business by migrating 3Com customers to Extreme's BlackDiamond line of enterprise network switches.

## Blessing in Disguise

Both Palmer and Craig Andersen, an enterprise network manager at Lockheed Martin Aeronautics Co. in Fort Worth, Texas, chose to move from 3Com products to Extreme's Gigabit Ethernet switches.

Andersen said Lockheed, which builds the F-18 military aircraft and parts of the F-22 fighter at its Fort Worth facility, used 3Com products for core switching on a 15,000-node network. And while Andersen said he viewed 3Com's decision to kill its enterprise product line as "a real bomb" at the time, he now says it was a

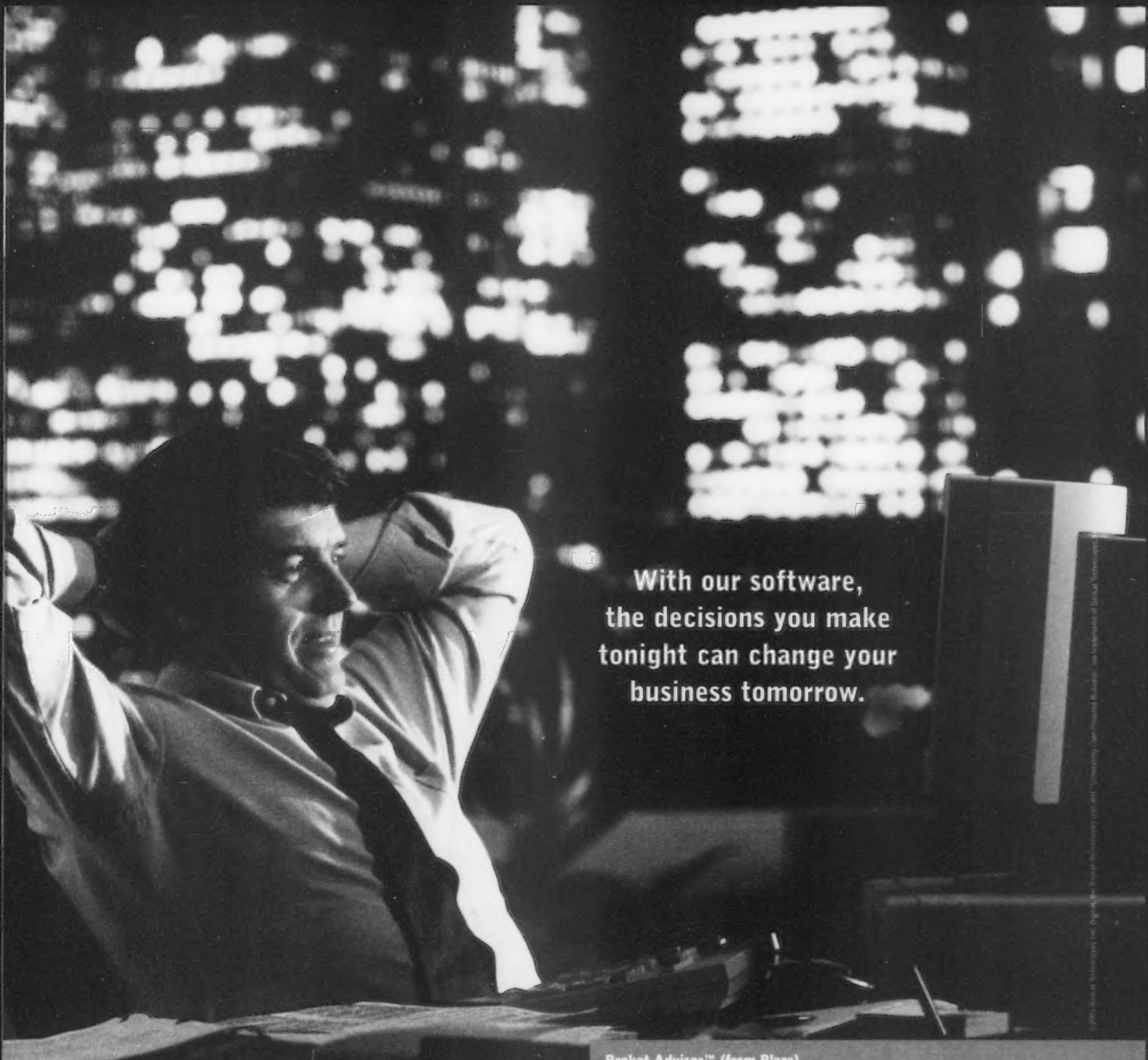
blessing in disguise. "Extreme offers Layer 3 switching, which helped with network segmentation issues," Andersen said. "3Com was just getting the ability to segment."

Palmer said he now has Extreme Gigabit Ethernet switches at the core of his network, and he's adding routers and hubs from San Jose-based Cisco Systems Inc. outside of the core. And he's learned his lesson. "I don't want to get locked into one vendor," Palmer said.

Ryan Rose, a network manager at the University of Northern Colorado in Greeley, who had installed new 3Com equipment 10 months prior to 3Com's exit, also switched to Cisco.

"We were very disappointed and felt betrayed," Rose said. The decision to go with Cisco stemmed from a good trade-in program and the fact that he just didn't "feel comfortable with Extreme," he explained.

A 3Com spokeswoman said last week that the company "still plays heavily in the enterprise market" and sells to businesses of all sizes. But she said 3Com's focus has changed from "large, complex products to simple, modular products." ▀



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# New Tools Aimed at VPN Management

Software allows changes to remote computers without end-user intervention

BY JAMES COPE

**T**HE IDEA of a virtual private network (VPN) that securely tunnels through the public Internet to connect offices and remote workers seems straightforward enough.

But network managers who have taken VPNs beyond the pilot stage and into full deployment know firsthand that managing VPN encryption, main-

taining data tunnel integrity and validating software on hundreds or thousands of client computers and office firewalls can be a formidable job.

Last week, two VPN vendors that are trying to secure and broaden their market positions — Redwood City, Calif.-based Check Point Software Ltd. and San Jose-based Cisco Systems Inc. — introduced enhancements to their management software that they say will

make corporate VPNs easier to deploy, update and monitor.

John Shelest, a senior network engineer at Equity Residential Properties Trust, a real estate investment trust that owns and manages more than 1,100 properties throughout the U.S., said his Check Point VPN has enabled his company to securely connect its remote offices to its Chicago headquarters.

It isn't easy to keep VPN client software updated for 1,100 users and to validate those changes in addition to changes on the company's eight firewalls, said Shelest. He has been

beta-testing Check Point's Next Generation (NG) infrastructure management software and said NG resolves many of the complexities of managing a Check Point VPN. NG lets him push software changes out to remote PCs without end-user intervention, Shelest explained.

He added that he also likes the NG graphical user interface, which makes it easier to define user security policies and lets him turn over firewall management to less-experienced staffers.

Paul Forbes, a network engineer at Global Positioning System manufacturer Trimble Navigation Ltd. in Sunnyvale, Calif., has been testing Cisco's CiscoWorks2000 VPN/Security Management Solution (VMS), which includes a monitor that gives a dashboard display of VPN performance and

status, as well as tools for managing VPN hardware and software changes.

While some users may like Cisco's VMS interface and the product's VPN monitoring capabilities, which can spot site-to-site VPN tunnel failures and report the number of concurrent tunnels and who's logged onto a remote access VPN, Forbes said he prefers Cisco Secure Policy Manager (CSPM), which requires more technical savvy to use.

"[CSPM] allows you to actively configure and manage all of the security aspects of network devices," Forbes said.

Cisco said its VMS product is available for \$8,000 and includes CSPM. Check Point's NG will be available in the second quarter and will be priced at between \$3,500 and \$20,000, depending on the number of network nodes. ■

## Treasury Secretary to Emphasize Interoperable Systems

Says access to data is key in decision-making

BY PATRICK THIBODEAU  
WASHINGTON

New U.S. Treasury Secretary Paul O'Neill last week outlined a broad IT vision for his department, with an emphasis on systems interoperability. He also cited a belief in the need to provide clear direction from the top, having felt the frustration that comes from ineffective management in his own days as a computer systems analyst.

It was a message that struck a chord with O'Neill's audience of IT workers from the Treasury Department and its affiliate agencies, including the Secret Service and the Internal Revenue Service. O'Neill, who took office last month, was the featured speaker at an IT-focused conference sponsored by the Treasury Department and the Armed Forces Communications and Electronics Association International.

O'Neill was formerly CEO of Alcoa Inc. in Pittsburgh. But in the early 1960s, at the start of his career, he was a systems analyst at the U.S. Veterans Administration. Citing a lack of direction by top managers, he recalled times "when I would sit and stare at the ceiling and say, 'Why don't they just tell us what the hell they want?'"

That comment prompted knowing laughter from the audience. "You've all been there too, right?" O'Neill asked with a grin. But he gave every indication that he plans to take an active leadership role on IT issues within the department. "I am very interested in using IT to improve the value equation of what we get out of everything we do," O'Neill said.

The fundamental principle of IT management is that "information should belong to

everyone in the organization," O'Neill said. "No one should be permitted to be, in effect, smarter than other people because they control the flow of information." Access to data is vital to fostering creative decision-making, he added.

Interoperability is another

priority, O'Neill said he learned the importance of "commonality" in systems from his work in the private sector. While proprietary or specially modified software can deliver some advantages to specific users, he said, the trade-off — the inability to easily share data

among different parts of an organization — isn't worth it.

The interoperability that O'Neill said he wants to see has been a major issue for many federal agencies.

"It's a culture issue for us," said Treasury Department CIO John Flyzik, who was recently appointed acting assistant secretary for management. "We learned from Y2k just how disjointed we really were." ■

## Bush Mulling Addition of Government High-Tech Post

BY PATRICK THIBODEAU  
FAIRFAX, VA.

Proclaiming that technology vendors and industry groups need "a champion" in Washington, Department of Commerce Secretary Donald Evans last week disclosed that the Bush administration is considering the creation of a position with responsibility for representing the views of high-tech companies.

Evans, speaking at the Global Internet Summit 2000 conference here, said technology vendors should have "a single point of contact to help [them] plot a course" on policy issues and on promoting market opportunities on a global basis. But after his speech, he said no

decision has been made about adding such a post. "We're continuing to view and consider what kind of model would best serve the IT world," he said.

Beyond that, Evans offered few specifics about the administration's plans in regard to technology issues. Instead, he listed some broad philosophical goals that all point toward minimal regulation.

"The better job we do of keeping government out of the way . . . the better job American business will do at home," he said.

On that point, Evans got some support from Ireland's Deputy Prime Minister, Mary Harney, who in a speech at the conference emphasized the need for a light regulatory touch. Ireland is doing better economically than some other European countries because of its approach to regulating companies, Harney said.

Al Berkeley, vice chairman of Washington-based Nasdaq Stock Market Inc., also called for deregulation of the equity markets and said international agreements are needed to allow the easy flow of investments among countries.

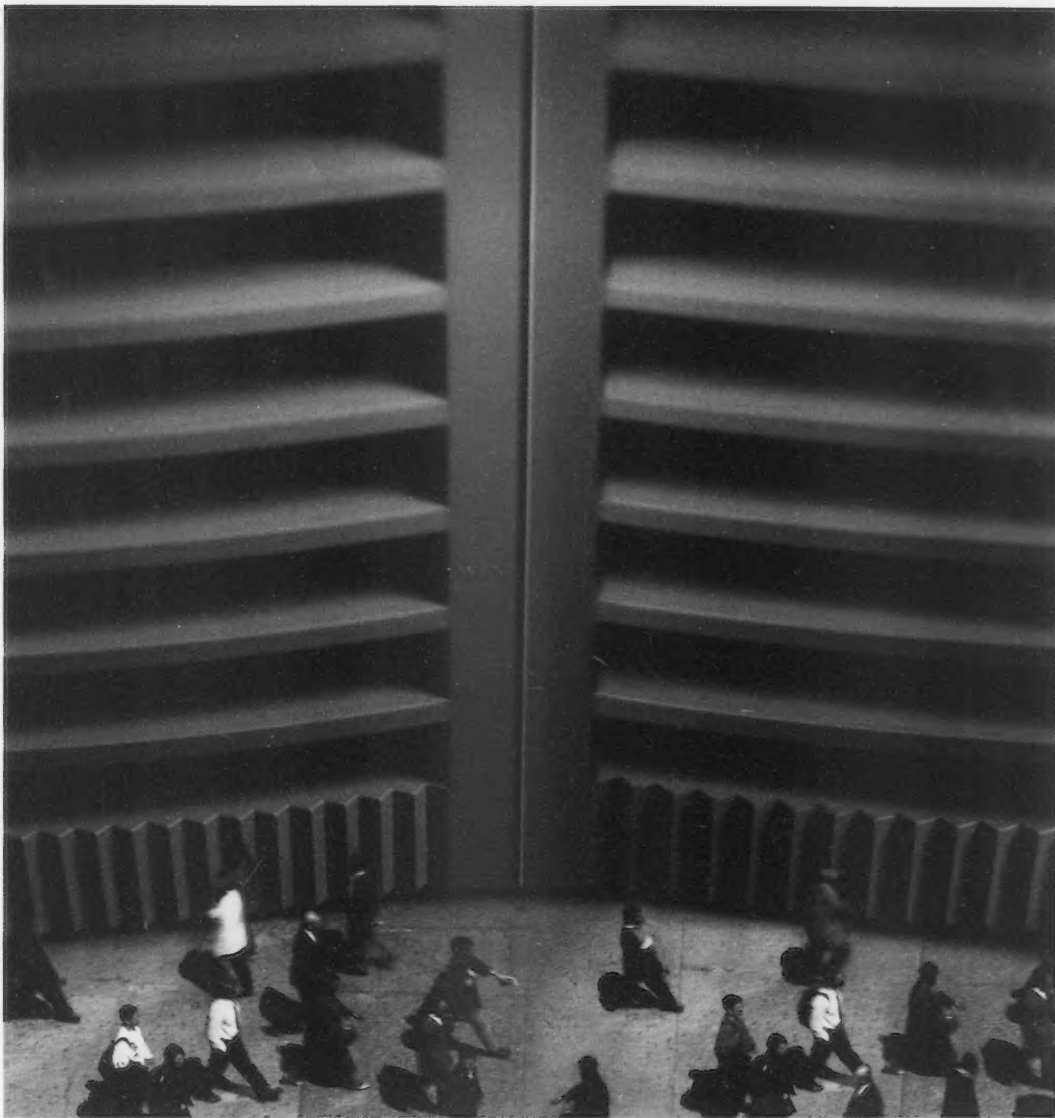
Currently, it's easier to buy a foreign wine "than to buy the stocks of any of those companies" that produce the wine, Berkeley said. ■



PAUL O'NEILL, new U.S. Treasury secretary, plans to take an active leadership role.



EVANS: Vendors should have a contact to help plot a course on issues.



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## BRIEFS

## Manufacturing Tops In Online Sales

Manufacturing led all industry sectors in e-commerce activity in 1999, with online sales of \$485 billion accounting for 12% of the \$4 trillion in total manufacturing shipments, said the U.S. Census Bureau in its first analysis of online sales. Merchant wholesalers came in second, with online sales of \$134 billion accounting for 5.3% of that sector's \$2.5 trillion in total sales. But service industries, including travel agencies and brokerages, reported that \$25 billion in e-commerce revenue represented only 0.6% of total revenue of \$4.3 trillion. The Census Bureau credited manufacturing's long-standing use of electronic data interchange for its online sales lead.

## IBM E-Com Servers Vulnerable to Hacks

IBM last week posted an advisory on its Web site about a tool that could potentially decrypt administrator and customer passwords residing on servers that use some IBM e-commerce software. SUQ.DIQ Version 1.00 allows a hacker to decrypt and obtain passwords from sites that use macros for conducting e-commerce transactions. The affected servers include Net.Commerce 3.1, 3.1.1, 3.1.2 and 3.2; WebSphere Commerce Suite 4.1 and 4.1.1; Net-Commerce Hosting Server 3.1.1, 3.1.2 and 3.2; WebSphere Commerce Suite, Service Provider Edition, 3.2; and WebSphere Commerce Suite, Market Place Edition 4.1. The vulnerability is on versions of these servers that run on several operating systems, including Windows NT, Solaris and AIX.

## Short Takes

RSA SECURITY INC. in Bedford, Mass., announced a cryptographic smart-card personalization system that it says allows a single card to be programmed for network and application access, digital credentials, corporate identification and building access. . . . IRIDIUM SATELLITE LLC in Leesburg, Va., has partnered with 13 service providers and unveiled a customer response center in a bid to resurrect its financially troubled satellite phone business.

## Canada Considers Legalizing Cell Phone Jamming Systems

*Begins 90-day public comment period; industry warns of possible legal challenges*

BY BOB BREWIN

THE CANADIAN government on Saturday kicked off a 90-day public comment period on whether to license technology aimed at preventing the inappropriate use of cell phones in places such as restaurants, theaters and concert halls.

Except for Israel, most countries, including the U.S., have blanket prohibitions against the use of any technology that jams or interferes with cell phone signals.

Industry Canada, the Canadian counterpart to the U.S. Department of Commerce, wants to obtain "the widest public views possible on the use of cell phone silencers,"

according to David Warnes, senior adviser for spectrum policy. Warnes said the Ottawa-based organization wants public input to help it make a decision on "whether and under what conditions license applications for these devices should be considered."

Canada will decide before year's end whether to change its current licensing policy, which prohibits the use of jamming technology except by public safety, law enforcement and other government agencies, Warnes said.

Marc Choma, a spokesman at the Canadian Wireless Telecommunications Association in Ottawa, said he believes that any technology that can block cellular phone use in Canada

should remain illegal, primarily because it could interfere with public safety communications. "The public safety aspect is our greatest concern, since a lot of fire and police [departments] use the same frequencies as the public [cell] phone system," he said.

Choma said he believes that social pressure will eventually curb offensive use of cellular phones in inappropriate places. "As time progresses, society will dictate acceptable behavior," he said.

## Possible Repercussions

The Radio Advisory Board of Canada (RABC), an Ottawa-based industry association of equipment manufacturers and service providers, said Industry Canada and the makers of cell phone silencers face potential legal repercussions if the technology is deployed.

In a position paper released in November, the Mobile and Personnel Communications Committee of the RABC said, in part, "Denial of service (especially emergency service) may have legal repercussions on the service providers, In-

## Sound of Silence

The Canadian government:

► Will decide before the end of this year on the licensing of cell phone silencers and conditions for their use.

► Kicked off a 90-day public comment period March 10.

► Is seeking input on removing regulations against the use of cell phone silencers.

dustry Canada, the jammed provider and the public venue operator (concert hall, etc.) where some perceived harm or loss has occurred, particularly in situations where lives could have been or were lost."

Elliott Hamilton, an analyst at The Strategis Group in Washington, said that in his view, the use of cell phone jammers is a simple issue. "A business owner should be able to do what they want to do on their premises," Hamilton said. "I don't see anything wrong [with jammers], as long as their signal does not bleed into the public space." ▀

## Start-up Claims Legal Cell Call Blocker

Cell Block Technologies Inc. has developed cell phone "intervention" technology that it claims can work around existing Canadian and U.S. prohibitions against cellular phone jamming.

J. David DeRosier, CEO of the Osterville, Mass.-based start-up, said his patent-pending technology has some wiggle room around current anti-jamming regulations because it "intervenes" rather than interferes with cell phone calls. This key difference, he maintained, could eventually allow him to market his product in both countries without any change in regulations.

DeRosier said Cell Block's technology intercepts cell phone calls and shunts them to a private, wireless channel that doesn't allow incoming or outgoing calls.

The Cell Block device, which DeRosier said he plans to package in a ceiling-mounted unit that's approximately the size of a smoke detector, works only within a range of about 6 feet. Larger areas such as concert halls or offices would need to install additional blockers to expand the coverage.

Cell Block anticipated the

Canadian public-comment period and has already set up operations in Canada. The company will initially target government markets in Canada and the U.S. DeRosier said security and public safety agencies have greater leeway in installing electronic countermeasures than movie theaters or restaurants have.

Cell phone industry associations on both sides of the border said they don't buy into the semantics behind Cell Block's claims. Marc Choma, a spokesman for the Canadian Wireless Telecommunications Association in Ottawa, said that regardless of DeRosier's interpretation of what constitutes jamming technology, he still views it as illegal under existing Canadian statutes.

Travis Larson, a spokesman for the Cellular Telecommunications & Internet Association in Washington, said Cell Block "does not pass the [Federal Communications Commission's] 'smell test' prohibiting the sale or use of devices designed to block or jam cell phone signals."

—Bob Brewin

## Microsoft Expands Effort to Share Windows Source Code

BY CAROL SLIWA

Microsoft Corp. has formalized a promised expansion of its Windows source-code-sharing program, detailing plans to give about 1,000 of its large corporate users in the U.S. an opportunity to view the closely guarded code.

The software company on March 2 sent an e-mail message to its field sales, consulting and support organizations explaining the new Enterprise Source Licensing Program, which will be offered free to customers that hold an Enterprise Agreement or Upgrade Advantage volume license and have at least 1,500 Windows licenses or seats in-house.

Microsoft officials estimated that about 1,000 firms meet those eligibility requirements. "We want to work with organizations that have a long-term commitment to Windows, because it's going to help them the most to have access to the source code," said product manager Jason Matusow.

Matusow said source-code access can help users debug the software, optimize their applications, troubleshoot problems and gain a deeper understanding of how Windows works. Microsoft wants to limit the program to firms "that will have the engineering resources to make the best use of the source access," he said. ▀

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Continued from page 1

## Supply Chains

that effort (see story at right).

Such applications, however, often don't account for all the differences among partners operating in different parts of the world. Therefore, they require extensive and costly customization, some users said.

Connecting to trading partners' applications is an Achilles' heel for many enterprise resource planning (ERP) systems. The connectivity complexities may mean users will have to rely on some manual processes, said Skip Grenoble, executive director of logistics research at Pennsylvania

State University in State College, Pa.

One company facing these challenges is Hunt Corp., a Statesville, N.C.-based maker and distributor of office supplies and graphics products. Hunt uses faxes and telephone calls to process transactions with some of its suppliers in Asia, a process that Ted Raiman, the company's director of supply-chain logistics, said slows the movement of goods through the company's supply chain. If Hunt establishes business relationships with suppliers in Mexico or other Latin American countries, which it's considering, Hunt may install electronic data interchange terminals in their facilities to reduce the amount of manual processing, he added.

In the long run, Hunt may seek to roll out Web-based supply-chain applications to overseas suppliers. But that would require an investment in training to ensure that workers at the suppliers use the proper documentation for business transactions, Raiman said.

Despite the complexities, Raiman said, transnational supply chains are the wave of the future as business executives recognize that there now "is truly a global economy." He added that customizing the MFG/PRO ERP software from

Carpinteria, Calif.-based QAD Inc. that Hunt uses for its procurement and supply-chain processes shouldn't be a major challenge.

Attendees cited other obstacles at this week's conference, which was sponsored by Supply-Chain Council Inc. in Pittsburgh. Among them is persuading suppliers in Latin America and other regions to convert to e-business applications for procurement and other business transactions.

"Even in North America, there are [big] challenges in convincing partners that the way to go is e-business," Grenoble said. "It's even tougher in developing countries." That requires companies to invest money in simply trying to get their business partners to go along with the whole idea, he added.

"The big problem is that Mexican companies are not aware of the value of a successful [supply-chain] application," said Alejandro Nieto, an author and logistics consultant in Dallas. "There is a lot of fear about unsuccessful software applications, and this creates a cautious environment."

But not everyone was so downbeat. "I don't think there is any more resistance to [e-business initiatives] in Latin America than there is in the

## Mexico Coke Beefs Up Its Supply Chain

CANCUN, MEXICO

Coca-Cola de Mexico is embarking on a major upgrade to its supply-chain systems and processes, including advanced SAP applications, company representatives said last week.

Coca-Cola de Mexico is also working to fine-tune its other procurement methods and applications and, in the long term, establish more e-business-based processes in the company, executives said here at the Supply Chain World Latin America conference.

The company supplies 17 bottling groups with the Coke mixture. The bottlers give updates to Coca-Cola de Mexico on how much of the mixture they need at regular intervals, and the company acts as their supplier.

Each bottler has its own level of technological sophistication: Some are very large and have state-of-the-art Web-based or electronic data interchange sys-

tems in place, while others still rely on fax and telephone communications, said Fernando Gonzalez Burchard, subdirector of supply-chain planning at Coca-Cola de Mexico.

The optimization project, which started a year ago, is still unfolding, but it won't force everyone to operate with the same software, said Gonzalez Burchard. However, the company does intend to come up with some sort of method to standardize the ordering processes, such as making all bottlers procure the mixture on a fixed weekly basis instead of randomly.

Coca-Cola de Mexico believes that e-business will help it achieve great competitive advantage. "We cannot wait till everyone is into e-business," said Francisco Espinosa, deputy director for quality systems at Coca-Cola de Mexico. "We like to establish the rules of the game."

— Marc L. Songini

## Supply-Chain Returns

Coca-Cola de Mexico reports the following results since installing SAP's Advanced Planner and Optimizer:

Accuracy of forecasts: **95%**, up from **70%**  
Accuracy of scheduling truck fleets: **98%**, up from **90%**  
Reduction of inventory level in supply chain: **20%**

Continued from page 1

## Domain Names

the whole process, said Maher. The greatest fear, he said, is that New.net and others will independently create clashing domains, causing online "address collisions" that will leave Internet users gridlocked. "It creates a separate Internet within the Internet," he said.

An ICANN spokesman declined to comment.

But David Post, a law professor and co-founder of ICANN-Watch.org, an online group that monitors ICANN and related activities, said New.net is doing what ICANN has been slow to do. The problem with ICANN, Post said, is that the group has always "arbitrarily" set top-level domains, determining what should and should not exist.

Technically, New.net isn't literally creating new top-level

domains but rather will use networks of Domain Name System servers to invisibly direct Web users to the 20 new domains by routing them through the company's own New.net address or through Internet service providers that have signed on to include the company's domains.

"Yes, it will be confusing" having new domains added by an outside entity like New.net, Post said. "That's the nature of the beast. There's value in having an ICANN-like thing to coordinate it... but there's a terrible cost with that, too. They get to decide what we need."

Steve Chadima, chief marketing officer at New.net, said his company was created because of market demand for more domain names on the Internet. "I think ICANN has moved slowly," he said.

New.net isn't the first to create new domains outside of ICANN's existing structure. Some 500 top-level domains

## Joining the .club

Tired of waiting for official action from ICANN, New.net is offering 20 new domain names, including:

.sport	.med
.club	.law
.inc	.ltd

are used on the Internet by different groups, but they aren't known to most people or aren't accessible without domain name server configuration changes to their computers.

But New.net has struck deals with EarthLink Inc., Excite@Home and NetZero Inc., which will automatically be able to direct their customers to New.net's domains.

Leah Gallegos, who operates AtlanticRoot Network Inc., a manager for five top-level domains outside the ICANN network, supports the creation of

additional domains but criticized New.net for acting in the same arbitrary way as ICANN, without the cooperation of others. In fact, she said, of the 20 domains announced by New.net, only .hola and .soc aren't already being used by other domain registries under companies like her own.

"It's a fine idea" to have more domains, Gallegos said. "But they need to do it with new [top-level domains] that don't exist" in other registries.

So what do prospective business domain name clients think about New.net's splash?

One transportation company executive, who asked to remain anonymous to protect his company's plans as it reviews its options, said he's in a catch-22. He doesn't want to buy domain names from New.net for fear of legitimizing non-ICANN Web domains, he said. But if his company doesn't buy those names, others could profit by buying them and then selling

them back at exorbitant prices.

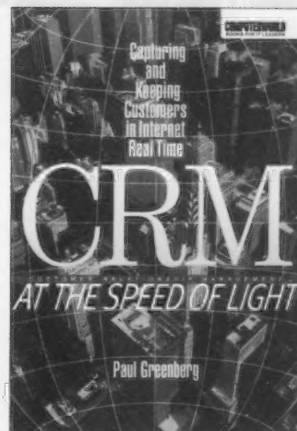
A spokeswoman for a sporting goods business said people who try to infringe on company trademarks are a constant problem and that New.net's business will add to her company's woes on the Internet. The problem, she said, is that since ICANN and other groups have no legal authority, there's nothing to control the problem. What's needed, she said, is for ICANN and others to look at all the legal ramifications of domains and trademarks and help create new laws protecting trademarks from infringement by outside forces.

"There really are no rules, and until there are, you're really not going to stop that," she said. "We'll certainly look at it. We're obviously concerned, but we haven't made a concrete strategy at this time." ■

## MORE THIS ISSUE

Do we really need 20 made-up top-level domains? asks Frank Hayes. **Page 78**

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# Experts, Users Strategize on Security at Crime Summit

*Strong policies, preservation of evidence seen as key weapons in security war*

BY DAN VERTON  
WASHINGTON

**T**WO WEEKS after the FBI nabbed one of its own in what has been called one of the worst cases of insider espionage in the agency's history, corporate IT professionals are turning their attention to the policies and procedures needed to protect sensitive corporate data.

Before a packed house of government and corporate IT users at the Cybercrime Summit 2001 held here recently, security experts outlined the dangers of not developing and adhering to internal security policies and computer crime forensics procedures.

Not knowing what policies to have and how to properly investigate possible cases of corporate espionage and preserve the evidence could mean not only losing proprietary data, but losing your case in court as well.

The Cybercrime Summit was sponsored by The American Society for Industrial Security in Alexandria, Va.

## Rules of the Road

"You need to have your own rules of the road in place," said Christian Genetski, an attorney who specializes in cyberlaw at the Washington office of Kirkland & Ellis.

According to Genetski, a former prosecutor for the U.S. Department of Justice, when you go to court to prosecute a case of insider abuse, it's important to be able to point to clear policies when the court asks how you normally handle these cases.

"If your answer is that 'we do what we do every time' ... you're going to be well ahead of the industry standard," he said.

In all cases of alleged insider wrongdoing, the linchpin of determining criminal liability is whether the activity in ques-

tion was authorized, Genetski said. Therefore, policies need to be created that spell out specific terms of acceptable use of company systems and security requirements for employees, customers and even contract workers, he said.

"Whatever the terms of service don't say is not forbidden," said Genetski.

Likewise, acceptable use and consent to monitor agreements must be applied to everyone equally, including the CEO and the systems administrators.

The same is true if you exempt certain devices, said Genetski. Monitoring policies should be extended to include peer-to-peer and wireless devices used in the office, he said. To get around personal privacy

issues, companies may want to consider issuing personal digital assistants to employees and enforce a work-only use policy, he said.

Wireless access and telecommuting are also clouding the picture and making the insider threat harder to define, said Pat Barry, director of managed security services at Nortel Networks Corp. in Brampton, Ontario.

## Proper Use of Forensics

One area that is still in the early-adopter phase is computer forensics.

"Forensics is investigation after the fact," said Eric Schwarz, national coordinator of computer forensics and electronic discovery at Deloitte & Touche LLP in Dallas. It's different from data recovery, he said, where the primary goal is to get the document back. "Our primary goal is to get the document back

and preserve the evidence," Schwarz said.

However, companies should be prepared for a daunting task, he said. One case last summer required more than 1,200 digital linear tapes to be submitted in court, he said.

Schwarz said the one piece of advice he would give companies that are trying to get up to speed on forensics is to get training. "Either use forensically trained people or obtain forensic training," he said. "Because not being able to use the information in court is worse than not having it."

Despite the increased interest in protecting corporate secrets, some experts aren't convinced that the importance companies and the government have attached to secrecy is warranted.

For example, Steven Aftergood, an analyst at the Federation of American Scientists in

## Forensics 101

Steps to get and protect evidence:

- Conduct a safe boot that prevents any future writes to the hard drive.
- Copy hard drive.
- Ensure chain of custody with physical locks, software locks and autologging and analysis.

Invest in software tools that:

- Conduct text searches of existing and deleted files and file stack.
- Conduct metadata searches.
- Have extraction and recovery features for graphics, printer files and faxes.
- Decode raw data and organize it into a database.
- Are capable of sifting through Unicode for document histories.

Washington, acknowledged that the loss of proprietary data "can be devastating" to companies, but he remains skeptical of the frenzied focus on secrecy.

"If I knew what the 11 herbs and spices used by Colonel Sanders were, I still couldn't compete with Kentucky Fried Chicken," said Aftergood. ▀

# Staffing, Costs Spur Security Outsourcing

*Ingersoll-Rand among firms looking at managed security*

BY DAN VERTON

Ingersoll-Rand Co. may soon outsource the bulk of its network security operations because it can neither find nor afford to pay enough trained security experts to do it in-house.

"We don't have the people necessary to do the required security tasks around the clock," said Dave Malicoat, manager of Internet services at the Woodcliff Lake, N.J.-based maker of industrial products.

One of the four companies Malicoat is considering having take over the security of his networks is Veritext. The Falls Church, Va.-based firm this month opened a new 4,000-square-foot network security monitoring center.

At Veritext's new Warning

and Response Exchange facility in Reston, Va., a team of 150 security experts will provide companies with around-the-clock monitoring of everything from intrusion-detection sensors to computer workstations, firewalls, phone switches and employee turnstiles. It's the second such facility set up by the company to date, with the other located in Los Angeles.

"There's not enough smart security people on the planet for all companies to have their own network defense centers," said Veritext CEO Don Walker.

## Pros and Cons

The new center offers triple redundancies in the areas of wireless connectivity, electrical power and air conditioning; physical security for a sensitive compartmentalized information facility; metal-reinforced walls; bulletproof glass; and as much as 4TB of storage.

Veritext's relationship with its parent company, Veridian



CEO DON WALKER: "There's not enough smart security people ... for all companies to have their own network defense centers."

Corp. in Alexandria, Va., allows it to tap into Veridian's large pool of expertise and its state-of-the-art threat-profile database, said Walker.

A recent study by The Yankee Group in Boston estimated that the market for managed security services could reach \$2.6 billion by 2005.

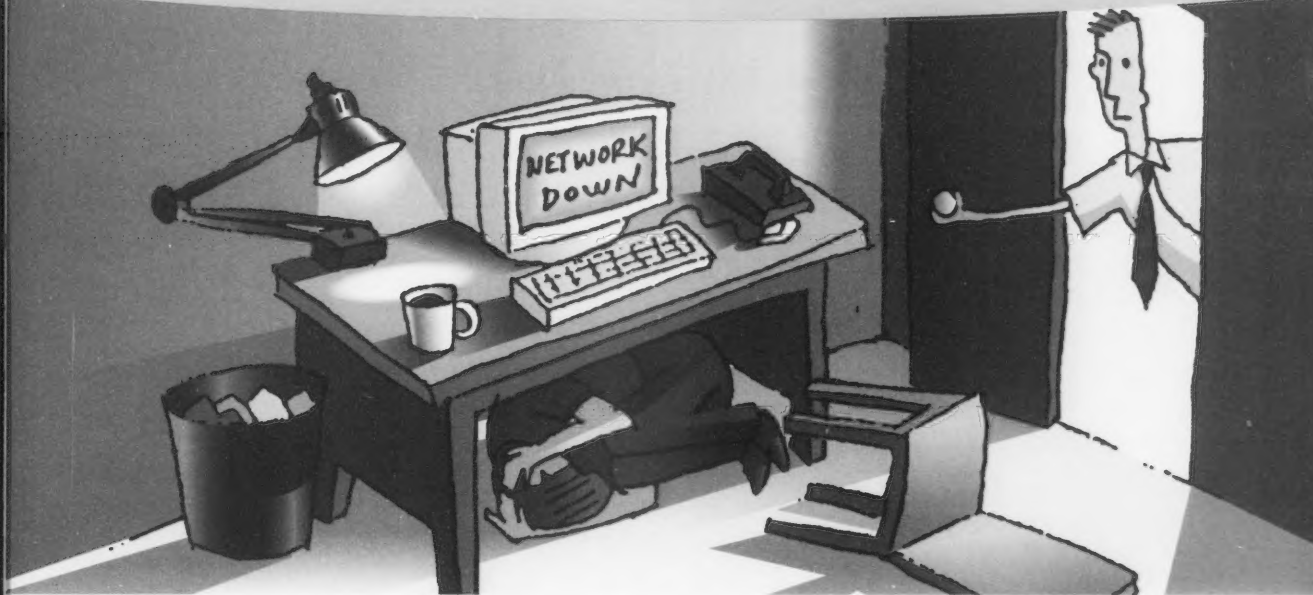
A lack of trained staff and economics are the primary drivers behind the push by most companies to outsource their network security, said analysts.

However, some companies are hesitant to outsource their internal network security out of fear that their proprietary information will be lost at the hands of a third party. They prefer to outsource only bits and pieces of their operations, particularly on the perimeter of their network. Companies like Veritext are then called in to fill only those gaps.

Other companies cited losing control of their own destiny and losing an appreciation for how security works as reasons for not outsourcing, according to a recent survey by Giga Information Group Inc. in Cambridge, Mass. ▀

9:08 a.m.

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## Fleet Expands CRM Tool to Hundreds of Banks

BY MARC L. SONGINI

FleetBoston Financial Corp. recently announced that it will roll out its customer relation-

ship management (CRM) sales system to hundreds of its offices in the Northeast.

The system will let branch

managers query Fleet's central database and run searches to find the best customers to target with its financial products,

explained Maura Fairbanks, manager of the retail distribution group at the Boston-based financial services firm. "That's the beauty of the product: It's not a cookie cutter," she said. "It allows the branch managers

to do customization to fit their markets."

Based on EnAct from Boston-based software company Xchange Inc., the Managing Local Markets (MLM) system provides salespeople with internal information combined with data about local markets. Until now, bank staffers had to cull through thousands of pages of lists to gather pertinent data — a process that could take hours or even days, said Fairbanks.

Fleet is one of the first financial institutions to get marketing data out of the back office and into the hands of frontline workers, said Kim Collins, an analyst at Gartner Group Inc. in Stamford, Conn.

Typically, Collins said, most banks use such data only for things like centralized mass-mailing campaigns.

### Tailored Sales Targeting

Collins noted that Fleet implemented the CRM system in 1997 after finding that 30% of its customers were a financial drain while another 30% accounted for 100% of revenue in addition to covering the liabilities from the other customers.

Using the MLM system, Fleet typically targets the most profitable 300 to 400 customers in a branch, providing them with better service and more attention, said Collins. After Fleet rolled out the system in 1997, the 430 branches with MLM added \$125 million more in high-end money-market accounts than the branches without the tool.

Fleet has already installed its MLM data analysis CRM application in 900 of its major branches and plans to add it to about 325 smaller branches by June. Sometime later this year, it expects to roll out the system to the 500 branches it's acquiring from Princeton, N.J.-based Summit Bancorp this month, Fairbanks said.

The company would like to move to a Web-based version of MLM but must first wrap up the Summit merger, said Fairbanks. She wouldn't provide information on the cost of the expansion or the expected return on investment. Fleet has 1,225 branches, from New Jersey to Maine.

"It's been a fantastic tool for us," said Suzanne Rossi, manager of a Fleet branch in Wakefield, R.I. "It allows me to plan for the sales in my office."

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## BRIEFS

## IBM to Start Biotech Consulting Group

IBM last week announced that it will establish a life sciences consulting practice within its Global Services organization to help biotechnology and pharmaceutical organizations use IT in research and development. The life sciences consulting business will cover knowledge management, data management and integration, as well as clinical-trial electronic enablement for companies doing drug development.

IBM said it aims to simplify data gathering and analysis, improve research and development cycles, and lower drug development costs by using the Internet and IBM's technology. The company will also offer hosting services, including Web site and application infrastructure management and outsourcing.

## Sun Moves Quickly, Buys P2P Company

Just weeks after its first public hints of peer-to-peer (P2P) technology aspirations, Sun Microsystems Inc. last week signed an agreement to acquire privately held P2P search company InfraSearch Inc. in Burlingame, Calif. In mid-February, Sun co-founder and Chief Scientist Bill Joy outlined the company's plan to develop a foundational technology for P2P communications called Juxtapose (Jxta). The news came as a surprise to some, because until then, Sun hadn't declared its interest in P2P. With the pending InfraSearch acquisition, however, the company appears to be aggressively trying to position itself for the P2P wave. InfraSearch develops search technology for P2P communications and hence could help provide one of the basic services for Jxta.

## Short Takes

A U.S. Federal Court judge has dismissed a 1999 lawsuit against COMPAQ COMPUTER CORP. that alleged that the computer maker knowingly sold machines with faulty floppy disk drives and controllers. . . . Internet portal operator LYCOS ASIA LTD. has made a major inroad to the Chinese language content market with the acquisition of the sixth-largest Chinese portal, Hong Kong-based MYRICE.COM.

## AT&amp;T's Earley Bullish on IP-Based Network Services

*Executive: Company plans to provide more data centers, improved network services*

AT&T CORP., often simply referred to as "the phone company" in an earlier time, has been building data centers at a record clip and beefing up its network services for business customers. Recently, at the company's global operations center in Basking Ridge, N.J., *Computerworld's* James Cope asked Kathleen Earley, president of AT&T Data and Internet Services, to discuss the company's game plan.

**Q: Traditionally, AT&T distinguished between voice and data services. Today, the focus seems**

**to be on a converged network infrastructure. Why the change?**

**A:** We've done point-to-point communications for over 100 years. Today, businesses need to get content to thousands of simultaneous users. That content can be as simple as a weather forecast or as demanding as [the] full streaming media of a Web event for a rock star. The fundamental difference is that content stays on the network but can be distributed simultaneously to thousands of endpoints that are clamoring for it.

**Q: How does this shift affect businesses?**

**A:** It means that a wider variety of applications and services will run over the same secure virtual private networks [VPN] — intranets, extranets and the public Internet. Voice over IP, which we're doing today, is one example of a network application. It's important to note that network security will be more crucial as public and private networks come together.

**Q: Is there a good business case for voice over IP?**

**A:** Think about virtualizing call centers. We introduced a service last month that allows remote users to self-provision a standard phone from a Web

browser to function as if it were connected directly to the office [private branch exchange]. With services like this and voice over IP over a VPN, companies can create global call centers of remote workers through network functionality instead of bringing workers to a particular physical location.



**EARLEY: AT&T began late but now is an Internet player.**

**Q: Why the big push for more data centers?**

**A:** Everything's migrating to IP. Data centers will be the

next-generation central offices. We now have 19 data centers, three of which went online this year. We plan to open five more by the end of the year. We see network hosting and content distribution services as major growth areas.

**Q: How is AT&T faring against other network service providers?**

**A:** We knew we missed the first one or two years in the Internet. But we also knew that the winners [that provide network services to businesses] would be two or three big global players. We're one of those players. It takes deep pockets. It's a capital-intensive, experience-intensive game. The economy and . . . where our competitors are right now hands us an extra card. ▀

## Acquisition Helps Palm Try Its Hand in Enterprise Market

*Middleware firm buy marks shift in focus*

BY BOB BREWIN

Palm Inc. last week extended its reach into the enterprise market with a \$264 million deal to acquire Extended Systems Inc., which makes middleware software that ties mobile devices such as Palm's handhelds, Microsoft Corp.'s Pocket PCs and keyboard-equipped BlackBerry pagers to back-office systems.

Palm said the acquisition of Boise, Idaho-based Extended Systems is part of an enterprise push aimed at helping the handheld maker move beyond its historical focus on serving individual end users. Santa Clara, Calif.-based Palm is now looking to provide support for multiple operating systems in an enterprise infrastructure.

Extended Systems' product line includes mobile data management software that let users

synchronize their handheld computers with corporate systems, plus wireless connectivity tools, printing packages and client/server database software keyed to the handheld market.

Palm said the acquisition will let it provide corporate technology managers with the

tools needed to support handhelds, which typically are bought by individual users. The goal is to help Palm become "as popular with CIOs as it is with individuals," said Palm CEO Carl Yankowski.

Chris Fletcher, an analyst at Boston-based Aberdeen Group Inc., said Extended Systems should bring "a broad range of proven products [and] a profitable company with an experienced engineering staff" to Palm. "This takes Palm well into the enterprise," he said. ▀

## IBM Throws Egghead.com a \$20M Lifeline

BY LUCAS MEARIAN

Struggling Egghead.com Inc. secured \$20 million in financing from IBM last week, but the online retailer was forced to use all of its assets as collateral for the financial lifeline.

John Labbett, Egghead.com's executive vice president and chief financial officer, said the credit line with IBM Global Financing will provide "sufficient funds to take us through to profitability" by the end of the year. He added that the company will continue to look

for other financing options to maintain a "solid cash balance."

Egghead said it secured the loan from IBM Global Financing with its inventory, accounts receivable and other assets.

The announcement comes on the heels of a series of setbacks for the Menlo Park, Calif.-based online retailer of technology products. Last week, Egghead.com laid off 77 employees, or 12% of its workforce, after reporting a fourth-quarter net revenue loss of \$9.6 million. Sales in that quarter were

down more than \$61 million compared with the same quarter the year before.

Formerly a brick-and-mortar retail chain, Egghead shuttered 83 retail stores in the U.S. three years ago and moved into the e-commerce realm. It was then bought in late 1999 by On-Sale.com, which renamed itself Egghead. ▀

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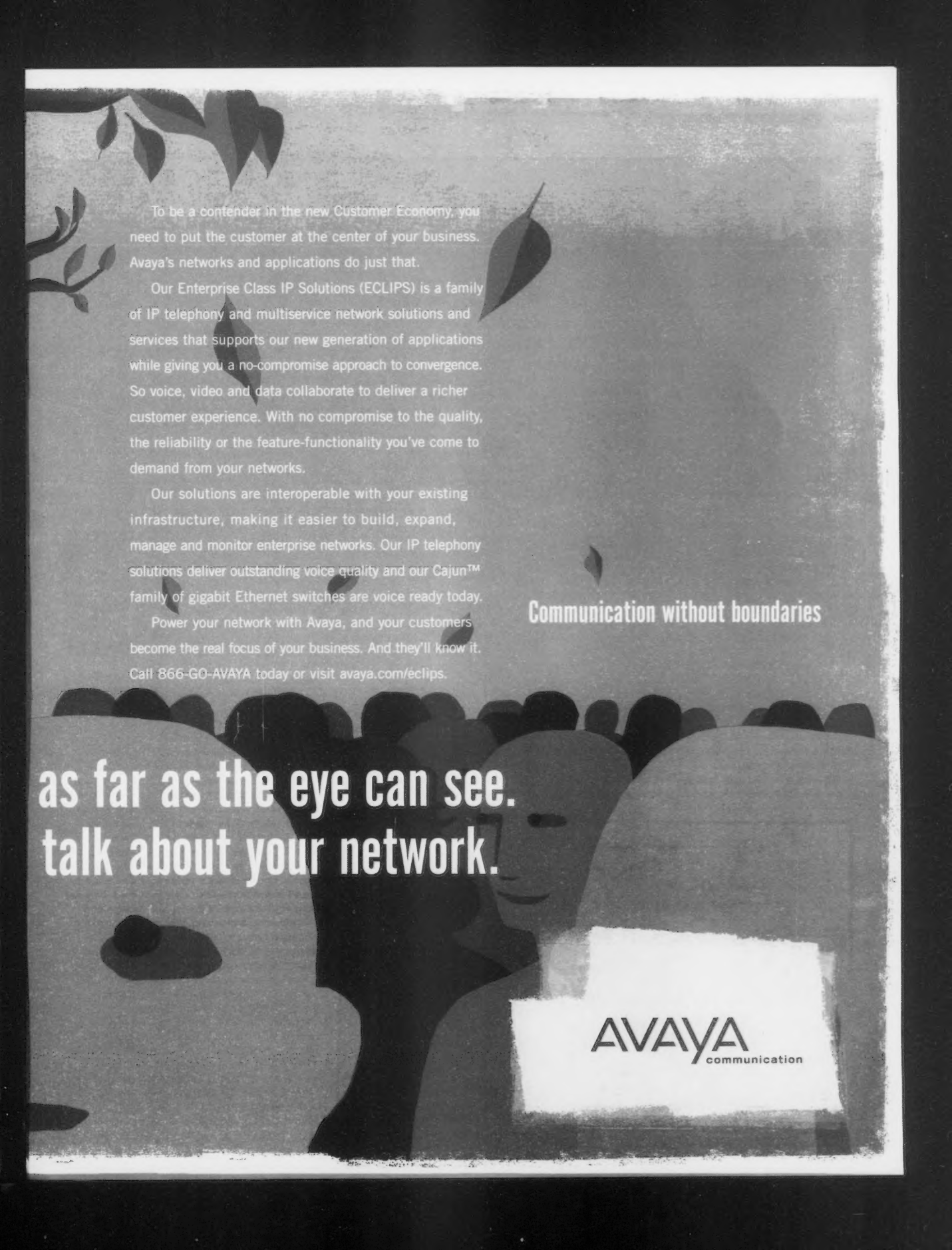


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MARYFRAN JOHNSON

# Bottom-Line Thinking

**T**IMING MAY BE EVERYTHING, but times are getting tougher. Last week on our front page, we reported that Walmart.com was pulling its online staff back into the profitable, sheltering arms of the mother corporation. Then in our business section we wrote about IT execs

"coming under increased pressure to cut costs and speed up the delivery" of moneymaking technologies ["Hard Times Ahead?" page 34].

All around the country, we see businesses reprioritizing IT spending and sidestepping "big-bang" projects in favor of quick-hitters that drive results more swiftly to the bottom line. Yet there are intriguing signals from the think tanks and industry blowhards indicating that even a nose dive into recession won't bring a crashing end to the need for savvy IT investments. Gartner Group says 65% of more than 500 CIOs that it polled last month were planning to sustain or increase e-business investments this year. Another study found that more than one-third of CEOs are likely to actively participate in IT planning these days.

So as we launch a magazine supplement today — *Computerworld ROI* — we feel intuitively in sync with this wobbly economy. What better time to be writing about return on investment and technology payback? We're aiming this bi-monthly magazine (which can also be found online at [www.computerworld.com/roi](http://www.computerworld.com/roi)) at senior executives and top business and IT strategists — the ones who end up justifying technology choices in the boardroom, under the steely gaze



MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at [maryfran.johnson@computerworld.com](mailto:maryfran.johnson@computerworld.com).

of the CEO. The name *Computerworld ROI* is meant to convey that intersection of technology understanding and business metrics where so many IT leaders live today.

"*Computerworld ROI* is focused on managing technology investments in tough times," explains Julia King, executive editor of our new publication and a longtime *Computerworld* reporter. "It's full of actionable, jargon-free information about how to apply the value of technology to business results." For instance,

in one of our lead stories ("The Big Bounce"), we look at how the lessons learned from dot-coms dropping the ball have taught many companies how to keep e-business on a roll.

"Few of the Fortune 500 retailers and manufacturers steeped in the thrill of the Internet are willing to talk about measuring the real value of their e-business ventures," writes Kathleen Melymuka in our cover story about ROI metrics for Web projects. Yet she managed to find executives from Raytheon, Deere and Martha Stewart Living who were willing to reveal how they measure e-business value.

We hope you'll join us as *Computerworld ROI* navigates today's main business crossroads — where technology meets the bottom line. ▀

PIMM FOX

# Boeing Shows How XML Can Help Business

**S**EVERAL YEARS AGO, Philip Condit, chairman and CEO of Boeing, asked how much business the company did with major suppliers.

"To find out, each unit at Boeing had to ask bunches of people who, in turn, had to ask other groups, because we have about 18 different procurement systems reaching out to our supplier network," recalls Kristina M. Erickson, director of venture relations at eBuy@Boeing, the Seattle-based company's portion of Exostar, the aerospace industry's business-to-business exchange. "It was quite a process."

Despite an apparent reluctance by some companies to jump on the XML bandwagon, Erickson showed me how an XML-based middleware tool can make it easier to do business and monitor supplier relationships.

Using a gateway broker — an application that sits behind Boeing's firewall and acts as a common interface for the company's 18 procurement systems and Exostar — Boeing hopes to reduce the number of its procurement systems to four or five.

Boeing's four major businesses have over the years built multiple procurement systems and standards using software from different vendors. Indeed, the chart Erickson used to illustrate how Boeing's business units connect to various suppliers is a spaghetti-like tangle of lines. But rather than ripping out each system and replacing it unilaterally, Boeing embarked on a measured plan to connect to Exostar using XML-based standards. Exostar is open to any supplier with a browser, Internet connection and security password. This has several advantages for Boeing and its suppliers.

For Boeing, it provides links to legacy systems, making it easier to cut the number of procurement systems. It also permits strategic evaluation of supplier data, using a supplier profile database. A single-source database offers Boeing data-mining opportunities and means easier connections to suppliers' enterprisewide systems.

And because Exostar uses XML rather than complicated electronic data interchange (EDI) formats, more suppliers can access the exchange at lower cost. Using Exostar and XML, different units of Boeing can use the same interface to connect to suppliers. Accounting, inventory, shipping and tracking systems all benefit.

For suppliers, XML is an alternative to EDI systems, "which are expensive," Erickson says. "Sup-



PIMM FOX is *Computerworld*'s West Coast bureau chief. Contact him at [pimm.fox@computerworld.com](mailto:pimm.fox@computerworld.com).



pliers had to put their own money into the batch EDI system. With Exostar, all they need is a browser."

XML should allow different business-to-business exchanges to develop common software tools for purchase orders and tracking. Also, Exostar could facilitate communication with other XML-based exchanges.

XML is more than just an attempt to settle on standards for e-commerce. It's a viable component for re-engineering the procurement process. XML-based exchanges can broaden sales channels, simplify procurement and cut the costs of doing business.

Companies should get out of their holding patterns and let XML take off. ▀

ELAN BITAN

## Two Ways for 'Clicks' to Partner With 'Bricks'

**A**LTHOUGH more transactions are being conducted online than ever and most companies are scrambling to assemble e-commerce strategies, the complete dominance of Internet ventures over traditional brick-and-mortar companies no longer seems a reasonable prediction. Indeed, the ongoing slide of Internet stocks proves that the business models of retailers such as Amazon.com need rethinking and that the pure Net play may be a thing of the past.

Instead, surviving businesses will emerge from strategic partnerships between brick-and-mortar enterprises and Internet companies. This wave of the future has already begun. Companies that have both dot-com and brick-and-mortar busi-

nesses (like Barnes & Noble) are integrating them to provide economies of scale and a leveraged set of offerings.

Brick-and-mortars can leverage logistical and operational expertise, as well as highly developed technology infrastructures, in order to gain an Internet distribution channel. For their part, Net-based businesses can satisfy clients, bump up their bottom



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lines and reclaim market capitalization by making and advertising strategic partnerships that accentuate customer service and operational efficiencies. Here are two synergies that you can expect from brick-and-click partnerships:

■ **Logistics and operations.** Many established brick-and-mortar companies are experts at delivering goods — an area that has been particularly hard on dot-coms' bottom lines — and can make their storage, inventory management and distribution

networks available to dot-coms. Brick-and-mortars can also leverage their capacity to take in customer returns, thus making up for another fundamental shortcoming of online retailers.

Last March, Best Buy and Micronpc.com announced a partnership in which Best Buy would establish kiosks in its stores, allowing customers to buy computers directly from the manufacturer, Micron Electronics.

This "bricks-and-clicks" model, which combines retail and direct services, provides the customer with the added value of selecting and personalizing a computer when buying directly from the manufacturer, while still getting the local support and service from a brand-name retail store.

Because of this partnership, Micron's sales markedly improved. Last August, for instance, it posted its first year-to-year gain in three years. ■ **Technology infrastructure.** It's intuitively obvious — but wrong — that dot-coms have a competitive technological advantage. Technology is expensive, and undercapitalized start-ups have priorities that can push IT to the back burner. Building the first phase of a basic technology architecture costs upward of \$2 million, which can seem rather expensive when the more immediate costs of advertising, marketing, sales, management and overhead must be met.

A sensible solution for dot-coms is to forge al-

liances with brick-and-mortars that already have this technology infrastructure that can manage their supply chains, accounts and inventory.

AOL's Shop@AOL did just that when it formed an alliance with Wal-Mart to bring the company's mammoth retail operation's supply chain to AOL's customers. Wal-Mart, which was slow to enter e-commerce, now has access to AOL's members in promoting Walmart.com, and AOL has a greatly expanded roster of products to offer its members through Shop@AOL, even though AOL's online brand remains entirely distinct from Wal-Mart's.

The click-and-mortar marriage serves both sides' most pressing needs. Brick-and-mortars find an easy and comparatively cheap way to develop an Internet channel by bringing their own advantages to the table. Meanwhile, Internet companies, with great ideas and the ability to attract customers, can begin to profit from their online expertise by shifting some of the more complex business elements — logistics and fulfillment costs — to the off-line world.

Some of these partnerships may remain purely back office and transparent to an online retailer's clients. Where pure Net plays have established online brands, advertising partnerships with trusted brick-and-mortars could add cachet for customers and confidence for investors warily eyeing Internet business models. ▀

## READERS' LETTERS

### Back to the Mideast

**T**HE LETTERS you received concerning the article "IT Under Siege: Conflict Poses Extreme Challenges" support the theory that people tend to see only what they want to ["Stick to the IT News," Readers' Letters, Jan. 29]. To me, the article seemed to report the facts, not just in a pro-Arab way. **Jon Parsons**  
Marshall Municipal Utilities  
Marshall, Mo.

### XML Not Just for Web

**W**HILE XML may be on many lips, it's clear that one of the goals of XML hasn't made it into many minds ["Users Still Cool to XML for Trading," Page One, Feb. 26]. As with its heftier sibling Standard Generalized Markup Language, one of the main goals of XML is to separate content from presentation. By doing so, one can transform the data for use by

many different clients.

There is a popular misconception that XML is just for Web browsers. The best place to use XML is in your import/export routines and the gateways of your business applications. Done correctly, an XML gateway to your application could import and export XML data that could be sent or received via EDI, e-mail, CORBA applications, message queues, Web servers, wireless devices or automated phone services. **Mark Wonsil**  
President  
4M Enterprises Inc.  
Royal Oak, Mich.

### Thumbs Down On Single-User OS

**W**INDOWS remains a single-user operating system, and no one can convince me otherwise ["Big Push to Win 2k Expected in '01," Page One, Feb. 19]. Our mission-critical servers run Sun,

HP or Linux, all of which are true multiuser operating systems. If you can't admin a server from a secure shell or telnet command line, then it has no business being in a data center. Having to administer Windows servers chews up bandwidth and money because we have to buy PCAnywhere. **James M. Susanka, CNE, MCSE, MCP-I**  
SBC Online — Web Services  
St. Louis

### No Sympathy

**T**HE ARGUMENT of the alleged Anna Kournikova virus writer, that he created the virus to show people how vulnerable they are, is spurious ["Suspected 'Anna' Virus Writer Turns Himself in to Dutch Police," *Computerworld.com*, Feb. 14]. If he walks on this one, it means we as a society are as morally bankrupt as he is because we sanction the more able bullying the less able

just because they can. **Buddy Jones**  
Test engineer  
Orlando

### Name Canada

**I** WAS SURPRISED you didn't mention Canada in "Tapping Foreign Shores" [Business, Feb. 12]. Keane has successfully opened an office in Halifax, and that's just one example of the local IT market. The cost of doing business in Canada is a lot lower, and the culture is very similar to that of the U.S. **Tim Sawlor**  
Software engineer  
ThinWeb Technologies  
Halifax, Nova Scotia

**COMPUTERWORLD** welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: [letters@computerworld.com](mailto:letters@computerworld.com). Include an address and phone number for immediate verification.

# Product Quicktake

## Spotlight on Verity for building e-Business Portals

There is no shortage of information on the Internet, but much of it is organized so ineffectively that it becomes nearly useless. People end up wasting time and effort sorting through volumes of information that is of no use to them in the hopes of uncovering those nuggets of information that are important.

Verity® K2 Catalog was developed to allow online shoppers to quickly and easily find the precise products and information they want from e-commerce sites. It classifies and organizes massive volumes of information for individual users or groups, sparing them from having to sort through irrelevant or inappropriate information. Verity claims its software helps convert visitors into buyers by quickly directing visitors to the items they want.

Verity K2 Catalog provides advanced search, categorization, classification and personalization capabilities. Its search function includes parametric search, which lets customers specify exactly what they are looking for, right down to details like color, size and price. This ensures that users are neither confronted with too large a set of results, which can overwhelm them, or with no results, which can discourage them. Verity K2 Catalog tracks user behavior at the search level and can personalize the search based on the user's behavior.

### Product Description

Verity K2 Catalog provides the infrastructure technology for building e-Business portals, including advanced search, categorization, classification, personalization and access to a wide variety of data types and formats. It has a component architecture that allows an organization to easily integrate K2 Catalog within existing e-Business environments.

K2 Catalog has the following components:

- **Intelligent Searching.** Verity incorporates human-oriented business rules through features such as Intelligent Classification, which lets e-

merchants organize the way products are presented and described on the site for the overall benefit of the online shopper. By delivering a manageable set of highly relevant results, K2 Catalog helps keep visitors engaged at the Web site, achieving increase in sales and customer loyalty. Through features such as smart correction of user error, parametric search, and relevancy ranking, users have an experience searching for online items that mirrors that of walking through a physical store.

Verity's full-text search allows shoppers to combine "free text" search along with concepts and combined terms such as "white blazer," plus "size 8," plus "Armani-style collar," instead of using simple, individual terms. This capability results in more precise and accurate search results.

- **Adaptive personalization.** By combining the right set of computer categorization and human business rules, Verity K2 Catalog provides an advanced personal shopping experience based on customers' preferences, affinity and requests. One of the features of Adaptive Personalization is Adaptive Ranking, which analyzes group behavior to automatically tune search results for maximum user satisfaction. The items customers seek will be consistently ranked at the top of the list.

- **e-Business Integration.** Verity K2 Catalog can be used with existing e-commerce portal initiatives. K2 Catalog can handle a wide range of data types and more than 250 data formats, both structured and unstructured, including PDFs, Notes, Corel, Framemaker, XML, multibyte data, Web and file systems and ODBC databases. It understands the native structure of the source data and renders the results of the search in browser-readable HTML with native formatting—spacing, fonts — intact. In addition, Verity K2 Catalog offers support in 24 Asian and European languages by recognizing, filtering, indexing and searching selected international character sets.

- **Scalability.** K2 Catalog uses brokering and



## Verity Inc. *at a glance*

**Product:** Verity® K2 Catalog  
**Product type:** e-Business Infrastructure Software

**Address:** 894 Ross Drive  
Sunnyvale, Calif. 94089

**Phone:** (408) 541-1500

**Fax:** (408) 541-4596

**Web Site:** [www.verity.com](http://www.verity.com)

**Founded:** 1988

**Ownership:** NASDAQ: VRTY

**Total Employees:** 454

**Total Employees in Service/Support:** 48

**Total Employees in R&D:** 150

**Number of installations:** 1,200

**Total Company Revenue:** Revenue for second fiscal quarter ended Nov. 30, 2000 was \$34.5 million

replicated indexes in conjunction with multiple servers to achieve fault tolerance and performance load balancing. It can perform searches across widely distributed environments and still deliver fast, even subsecond, response.

- **Security.** Verity K2 Catalog honors whatever security is already in place. It takes advantage of access control lists and existing directories for authentication. It supports Solaris 2.6, 7.0 and 8.0 as well as Microsoft Windows 2000.

Verity also offers K2 Enterprise, an infrastructure technology tailored for enterprise portals with all the functionality of K2 Catalog along with the security and connectivity modules.

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DAVID FOOTE

## Don't Kid Yourself: Leaders Are Made, Not Born

**M**ANY OF US ARE heading back to campus this spring for class reunions. I'll be attending two — high school and graduate school. So, it's easy to start obsessing a little about what you've made of yourself since your school days.

Though daunting, it's probably a good thing to occasionally take a personal inventory. I've checked in with a few of my old classmate buddies recently. We all seem to be more intrigued by the "whys" and "whos" of the

past umpteen years than by the "whats," "wheres" and "hows."

For instance, we all agree that family background and academic education have been less compelling factors in our achievements and leadership development than the people we've met and learned important things from along the way. I'm referring to mentors, coaches and other people who were kind enough to offer their criticism, wisdom and guidance when we



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needed it most.

One of my most vivid memories from graduate business school was when the dean loaned a few of us his influence (mainly his stationery) to help persuade prominent CEOs to give us interviews for an article about leadership we intended to write for the alumni magazine. We wanted to know how they made it to the top while others didn't. If there was something special about these executives, where did it come from?

We were careful to target only those CEOs acknowledged by their peers as true leaders, not simply people in leadership positions. We also needed CEOs from different backgrounds and life experiences so that we could test several hypotheses: Are leaders "born," or are they "made"? Did military experience contribute? Is it enough to be born into an influential family or to go to the right school? Or is opportunism the thing — say, marrying the boss's daughter (the path of one interviewee) or having the good fortune of being in the right place at the right time?

There was precious little clear consensus, except in one area: mentors and coaches. Nearly every leader mentioned that such relationships at various career stages had much to do with his

development and ultimate success.

We discovered that these influential teachers often were not their direct superiors but someone else who took an interest in them and provided feedback and counsel. While early successes may have helped some to be "discovered," these CEOs insisted that the more significant factor was that their employers encouraged mentoring, coaching and the skills development to support them. For example, one Fortune 200 corporation offered classes in improving listening skills to all employees and provided incentives to encourage attendance.

It's easy to blame various biases — such as gender, race, disability or economics — or otherwise segment the population and declare that not everyone has the same shot at becoming a leader. But that would ignore the fact that leadership is found everywhere you look in society, at many levels of economic and social status and in a truly diverse sampling of individuals.

At a time when pundits decry the leadership drought, the truth is that leadership qualities can be spotted and nurtured, and everyone has leadership potential. Mentoring and coaching programs will have a huge payoff for employers wise enough to invest in them. ▀

THORNTON MAY

## Lessons From Steinbeck: The Modern 'Okies'

**R**EMEMBER THE Pulitzer Prize-winning novel *The Grapes of Wrath*, in

which John Steinbeck wrote of the plight of the "Okies," who were forced off their lands in Oklahoma during the Great Depression and headed west to California? Maybe we can feel similar sympathy and compassion today for the "dot-com Okies," those New Economy professionals who have been forced off their plots of cyberturf.

While the level of today's economic "softening" can't compare with what people experienced during the 1930s, the gap between what the people being laid off wanted and what they got is very extreme. During the Depression, the floor, or despair to which people sank, was too low. Seven decades later, the ceiling, or the expectation of quick and easy wealth, was much too



THORNTON MAY is a corporate futurist and chief awareness officer at Guardent Inc. in Waltham, Mass. Contact him at [thornton.may@guardent.com](mailto:thornton.may@guardent.com).

high. Paraphrasing one of Franklin Roosevelt's memorable fireside chats, the digital-didn't-gets erroneously thought they were a generation to which much would be given. During the Great Depression, suffering was a function of how low we were. In the current Nasdaq plunge, suffering has become a function of how high we didn't become. These are different but strangely similar levels of human unhappiness.

## Take a New Approach

Isn't it time to stop saying "I told you so" and start trying to understand what's actually going on in the post-Nasdaq-bubble labor marketplace? We can learn a great deal about a set of people and ourselves when we examine how they and we deal with identity-shattering setbacks.

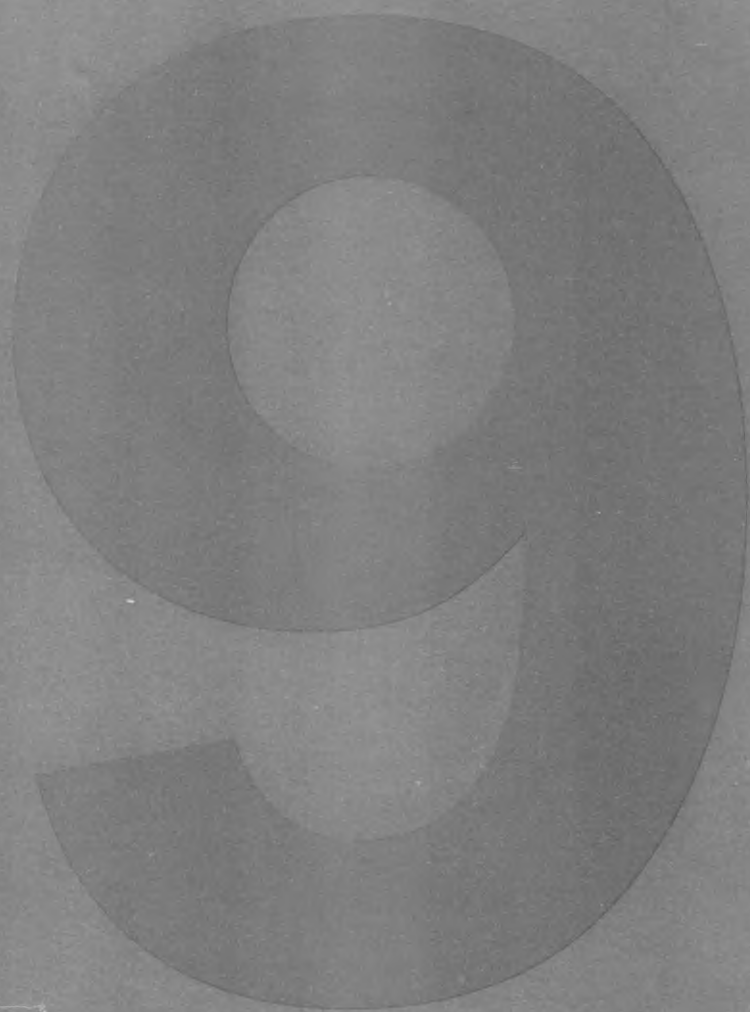
Steinbeck's Okies, the Joad family, represented the suffering of 1930s-era farmworkers who were driven from their land by changing economic circumstances. With nowhere to go, they attempted to replace the failed dream of tenant farming in Oklahoma with the distant dream of owning land in California. Is this situation analogous to the dot-com Okies, whose first "second dream" in many cases is to find a more durable dot-com to join?

The Steinbeck-era Okies segmented their lives using a truck-centric classification scheme: "Sell it, pack it, leave it or burn it." Separated from the land and out of work, the newly homeless started a massive migration to California by way of Route 66. Where will the dot-com Okies go? They can't go back to Old Economy companies; those firms aren't hiring. In fact, they're doing the inverse. They can't go forward to the venture capitalists with new business plans; those funding spigots have been turned off. Is there no work for these hands and minds to do?

When the dot-com bubble burst, what happened to the psyches of the dot-com Okies? The typical dot-com Okie is young and smart but also bitter. Most, having never experienced a more-job-seekers-than-jobs labor market, were under the deeply held belief that workplace "bad things" happened only to those who did wrong or performed poorly. For a good number, the first impulse has been to seek legal counsel. It's somewhat ironic that a generation of workers who prided themselves on bucking the system looks to that very system for help and justice when they hit the first speed bumps of their careers.

If you look at the black-and-white photos of Steinbeck's Okies en route to California, you can't help but be impressed with the inner strength that shows through on their faces. Each night on the road, they and their fellow travelers re-created their worlds. Leaders were chosen, and unspoken codes of privacy and generosity evolved.

Downtimes test all of us. The Great Depression left an indelible mark on the nation's psyche and turned people's lives upside down. For those of us who haven't been thrown off our digital land, we should be able to "spare a dime," such as a kind word and maybe some short-term special projects for the dot-com Okies as they pass by. ▀





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\*This level of availability is dependent on many factors outside of the operating system, including other hardware and software technologies, mission-critical operational processes and professional services.





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Microsoft

# BUSINESS

## ONLINE DELAYS

Think everyone is online? Think again. A surprising number of companies haven't even begun implementing e-business initiatives, according to chief financial officers at a recent conference. **► 36**

## MASTER PLAN

Microsoft's grand scheme to pull together its Internet and enterprise applications under its .Net umbrella could help simplify connections between business-to-business partners, writes Kevin Fogarty. But it's not likely. **► 36**

## FOCUS ON H-1BS

■ Lew Wheeler expects to hire 700 H-1B workers this year alone. Find out why. **► 42**

■ The government does a dismal job of tracking the need for more foreign workers, says the chairman of a National Research Council committee. **► 44**

■ Find out what drives talented high-tech workers to travel thousands of miles for a job. **► 46**

## KEEPING THE FAITH

CIOs in the Silicon Valley area have a tough enough time retaining quality IT workers. Imagine what it's like for Roger Gray, CIO at Pacific Gas & Electric (PG&E). As PG&E's dire outlook makes national news headlines, keeping employees motivated and focused on their work is next to impossible. But Gray isn't about to give up. **► 50**



"THE INTERNET changes how we interface with the customer, how we manage internally, and makes it possible to do direct marketing. For the first time, we're talking to our true customer," says Charles Peters, senior executive vice president and e-business leader at Emerson.

## CUSTOMER-FOCUSED CULTURE CLASH

**SO YOU'VE GOT YOUR** customer relationship management (CRM) system in place and you're ready to roll, right? Wrong. Between 55% and 75% of CRM projects fail because salespeople don't use the systems. In order for CRM systems to succeed, companies need to remember that they're only tools. And if you don't teach employees how to use CRM systems or explain why they're being used, they won't get you very far.

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# IONA WORLD® 2001

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It offers in-depth conference sessions, customer case studies, hands-on technical sessions, and an exhibit hall where attendees can view technologies and solutions from leading vendors and consultants.

Attendees will receive the latest information and advice on IONA's iPortal products and Global Consulting Services. IONA World will show attendees how the future of e-business will be conducted.

### Tracks and Sessions

The IONA World 2001 Conference Program will offer a variety of technical and business-oriented sessions designed to cover the spectrum on e-business. In addition, we are also offering a range of pre-and post-conference training workshops.

### IONA Technologies

You will learn about the latest innovations in IONA's technologies, products, and services from the experts on the IONA team. We are offering two tracks, with topics including:

- Orbix 2000
- iPortal Application Server
- iPortal OS/390 Server
- Exciting new product developments
- iPortal Integrator
- iPortal XMLBus

### E-Business Tracks

There will be three tracks where IONA partners, customers and other industry experts will be presenting on various topics. There will be vertical-specific presentations covering the finance and telecommunications industry as well as broader e-business applications such as:

- E-Business Development
- E-Business Deployment
- E-Business Technologies

### Birds-of-a-Feather Sessions

Birds-of-a-Feather (BOF) Sessions will be held throughout the conference. Attendees are encouraged to discuss their experiences in these roundtable-

style sessions. Topics include:

- Model-Driven Architecture
- Orbix 2000 Architectures
- Orbix 2000 Migration
- Web Architectures with iPortal Application Server
- Financial Services
- Telecom Leaders

### Pre- and Post-Conference Workshops

IONA is offering a variety of pre- and post-conference training sessions for an additional fee. These four-hour training sessions, presented by IONA's Global Services professionals, are designed to drill down in-depth into specific topics to provide a more thorough understanding than a standard conference session. Most Workshops will be repeated if you are interested in attending both pre-and post-conference.

### Workshop Topics:

- Architecting Total Business Integration
- Global Services: iPortal SureTrack
- Using the iPortal Application Server
- Building Enterprise Portals with the iPortal Server
- Building CORBA Solutions with Orbix 2000.

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## CFOs Not So Fast to Implement E-Business Strategies

*Companies wait for proven model*

BY THOMAS HOFFMAN

A surprisingly high number of companies, especially so-called Old Economy firms, continue to be wary about braving the e-business waters.

In a poll of the more than 100 attendees at the 10th Annual Business Week Forum of Chief Financial Officers held recently in Palm Beach, Fla., 24% of the respondents said their companies aren't yet involved in any online business activities. That includes even relatively mundane functions such as electronic invoicing.

Part of the problem, according to many of the CFOs, is that it's probably going to take at least another few years before successful e-business models have been firmly established and can be easily implemented by companies. That's true even at some businesses that have their feet in both the brick-and-mortar and online worlds.

"We're going to have to wait a few years to see how all these [electronic] business models shake out," said Ray Arthur, CFO at Fort Lee, N.J.-based Toysrus.com Inc., the online affiliate of Paramus, N.J.-based retailer Toys R Us Inc.

### Slow Implementation

Other companies that have been aggressive about championing e-business strategies have run into some snags. For example, James Parke, vice chairman and CFO at General Electric Capital Corp., said the Stamford, Conn.-based firm has faced challenges in getting its "hands around [the] systems that worked well in the legacy world but had to be Web-enabled."

In addition, Parke said, "a lot of process and cultural changes were needed" before GE Capital was ready to conduct business online, and that effort is still continuing, even though the financial services arm of Fairfield, Conn.-based General Electric Co. has successfully implemented some e-business initiatives.

In one case, it took less than six months to achieve a return

on a \$1.5 million software investment that was made to Web-enable data gathered from private-label credit cards GE Capital supports for Atlanta-based The Home Depot Inc. and other corporate clients. But Parke acknowledged that it's hard to quantify how much such moves are contributing to GE Capital's bottom line.

"The industries that we're in have not been transformed by e-business," he said.

But others have. Patrick J. Spain, chairman and CEO of

Hoover's Inc. in Austin, Texas, said the provider of company-specific research is now generating 98% of its sales online, compared with zero just a few years ago.

But that hasn't come easily. Spain said it has "been a continuing challenge" to get writers and researchers to conceptualize their work from an on-line standpoint.

One of the fundamentals financial executives are discovering about e-business is that the same principles apply as in

the physical world: Companies still need to make money.

"The laws of economics have not been repealed, [and] the basic methods for making money have not really changed," said Thomas W. Malone, professor of information systems at the MIT Sloan School of Management.

But what is changing, Malone added, is that CFOs are being asked to act as "process architects" for their companies. That emerging role focuses on internal processes that



GE'S JAMES PARKE: A lot of cultural and process changes needed.

cut across different departments in an attempt to ensure that customers, suppliers and other business partners are linked together, he said. ▀

KEVIN FOGARTY

## Promise of Disaster

IT'S INTERESTING that sometimes the biggest disasters aren't those that catch people by surprise; they're the ones that build up slowly and obviously, mesmerizing people who aren't swept up in them with the awful majesty of their approach.

Slow-moving winter storms, high-tech start-ups, hasty marriages. No matter how obvious the risk, people leap into situations they should stay out of, or they stay put when they should be hiding under a rock.

So it shouldn't really surprise anyone that Microsoft's grand architectural scheme to pull together all of the Internet and enterprise applications under its .Net umbrella is gaining adherents — even among users who are normally skeptical of grand schemes.

After all, it's not a bad concept. Take a pile of existing Web standards and protocols, like XML, wrap up the most common object-oriented programming component models with a shared runtime to make it

easier for them to interoperate, add in a couple of layers of middleware and pitch major pieces of the whole picture as open standards.

If it works, it would simplify the problem of how to automate a business-to-business relationship by using relatively simple Web technology to tightly integrate the complex computing environments of separate companies.

Right now, that problem is tough enough that even in sophisticated manufacturing sectors like aéro-

space and automotive, companies have to pick and choose which exchanges or one-on-one connections they can afford to build.

Unfortunately, simple is attractive but often doesn't work.

In the early '90s, for exam-

ple, IBM tried a grand plan to standardize mainframe and client/server networking and application development using the Systems Network Architecture and AD/Cycle application development architecture.

Together, the two were supposed to mask the complexity of the Gordian knot that is the IT infrastructure at companies of any decent size. The plan was to help shorten development cycles and make applications easier to customize.

It was widely hyped. IBM had enormous power in the market. It still didn't work.

Still, most users who have talked to *Computerworld* about .Net are pretty optimistic — at least more so than about previous Microsoft architectures like ActiveX or Windows DNA.

They like that vendors other than Microsoft, including IBM and Web exchange leader Ariba, are involved. And they like that Microsoft doesn't directly own core pieces like Simple Object Access Protocol, which it has proposed as a standard to the Internet Engineering Task Force.

But talk to users about anything but .Net, and they

say they are uncomfortable about how tightly they are already wed to Microsoft. They don't like how it changes licensing requirements at whim, ships upgrades that aren't backward-compatible, puts off repairs to known flaws and treats Unix and other non-Microsoft products as "alien environments."

They also don't like that even federal courts don't seem able to limit Microsoft's power.

That's the ominous shadow hanging over this whole rosy picture.

If it works, .Net will tie corporations even more tightly to Microsoft than before. They will be dependent not only on Microsoft operating systems, applications and development tools, but also on the whole .Net framework, on top of which they'll have to build their own technology. Heavy .Net users will have to change something every time Microsoft twitches — just like every other Windows software developer.

If .Net works, and Microsoft doesn't recast it to better compete with some new threat, .Net could be the simple answer Microsoft promises.

Some marriages of convenience do work. Others are slow-motion train wrecks whose end won't be any less disastrous for having taken their time getting there. ▀



KEVIN FOGARTY is *Computerworld's* features editor. Contact him at [kevin.fogarty@computerworld.com](mailto:kevin.fogarty@computerworld.com).

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## Report: E-Tax Prep Needs Business Networks

BY MARIA TROMBLY

Financial firms should join with companies like financial services firm H&R Block Inc.

and Intuit Inc., maker of TurboTax software, to automate the tax preparation process, suggests a recent report.

As more people file their taxes electronically, some brokerages and banks are starting to offer downloadable infor-

mation directly from financial accounts to tax forms, said Jaime Punishill, an analyst at Forrester Research Inc. in Cambridge, Mass., and author of "2001: The Online Tax Preparation Boom."

"Prepopulated forms will attract active traders and convenience seekers," he said.

The industry leader when it comes to forging alliances with financial services institutions is Mountain View, Calif.-based Intuit, said Punishill. Although other companies are considering moving in the same direction, Intuit is the only one so far to have enabled tax data to be downloaded, he said.

Intuit's TurboTax software can import data from 10 financial institutions, payroll companies and e-business application providers, including Ceridian Corp., Fidelity Investments and PeopleSoft Inc.

### Long, Cumbersome Process

Financial institutions have to set up a dedicated Open Financial Exchange server to communicate with TurboTax, a process that takes two to six months, said Todd Stanley, senior product manager for Intuit's TurboTax service.

One criticism of the service is that it's cumbersome, especially for simple data like W-2 income statements.

"It's actually faster to take a W-2 and input the information yourself," said Roger Ochs, president of financial services firm H.D. Vest Inc. in Irving, Texas. "I don't know how feasible it is from a business standpoint. But we're investigating it to see if we want to launch it for next year." A better way to do taxes, he said, is to get the data directly from the Internal Revenue Service.

"All these third parties, whether it's the parties that generate the W-2s or [those] that generate the 1099s, have to file everything to the IRS," he said. "And we're talking to them about that, but they're a little slow to respond."

Gene Goldenberg, senior vice president for e-solutions at H&R Block in Kansas City, Mo., said he'd also like to see the IRS open up its systems.

"But I don't think we're going to get there very soon. The IRS has a fiduciary responsibility, a very strong obligation as the guardian of taxpayer information. That aside, their systems can't handle it," Goldenberg said. "In the meantime, we are working on developing plans with various payroll-processing companies and brokerage services to make this data easily importable into a tax return." ▀

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## WORKSTYLES

### Chico's IT Goes Up in Size

**Interviewee:** Mark Colbert, vice president of information systems

**Company:** Chico's FAS Inc., a women's apparel retailer with 250 stores nationwide

**Location:** Fort Myers, Fla.

**Number of IT employees:** 29; there were eight in 1999

**Number of employees (end users):** About 2,800 company-wide; 300 in Fort Myers

**Major IT initiatives:** Following a 22-store pilot, Chico's is rolling out new Dell Computer Corp. hardware and a new point-of-sale system to all of its stores. The software package, from CRS Retail Systems in Newburgh, N.Y., will replace a 10-year-old DOS-based system that was developed in-house.

The registers are being tied via a frame-relay connection to IBM AS/400s at the corporate office. That will enable store employees to do real-time data lookups for customers who are members of Chico's "Passport Club" loyalty program. The new system will also allow one store to search for and order out-of-stock merchandise from another store.

Also, Chico's is finishing an upgrade of its major merchandising, warehouse and financial system from SVI Retail in Irvine, Calif. The company is also switching from Novell Inc.'s NetWare to Microsoft Corp's Windows 2000 Server for network file and print services.

**Dress code:** "It's very, very casual here. In fact, I'm wearing pretty faded blue jeans today and a knit polo shirt. ... I'm sure if people went overboard, they might say something to them. But it's the most liberal place I've ever seen when it comes to dress."

**Career paths for IT workers:** "When I started here two years ago, the shop had eight people in it. It was very, very small. There are 29 people now. ... There's a lot of opportunity. When you come to a shop like we're in, it's so small that you end up doing everything."

**Free refreshments:** "We have the coffee and the tea and the hot chocolate. And every

Friday at 5 o'clock, the [chief financial officer] comes out and he rings this big old bell as hard as he can, and they bring in coolers of beer ... for the entire corporate office."

It's in the CFO's office. People hang out in there and outside of it. He's got a bottle opener hanging on the side of a cabinet. ... He plays Bruce Springsteen [and has] Bruce Springsteen pictures hanging."

**Office building:** "The original building [where the IT staff works] is beautiful. [It's] all brick. Inside, all the cubicles are made with wood and they have glass windows - little 12-by-12 glass panes going around them, [which are all] different colors."

"They added another [white concrete] building right next to [the original building]. ... It's very artsy. It's not something you'd expect in Fort Myers."

**Perks:** 50% discount on merchandise. "Twice a year, they have an employee stock purchase program. There's the typical insurance and 401(k)."

**What everyone complains about:** "I can only think about what IT complains about and that is they do work a lot. They really do. I don't think that they're complaining about the work. They do go out of their way because they do like it, and they do care about the company. But they still do a lot of nights and weekend work."

"The other complaint would be that it seems like IT gets the short end on the offices and cubicles as far as size goes ... I swear they asked every other department what they wanted and went through that and they got to the end and said, 'Well, this is all the space we've got left.'"

**Would employees feel comfortable e-mailing the CEO?** "He has an open-door policy. He's not much of an e-mail kind of guy. So I don't think they would e-mail him. I think they would maybe go to his office. But would they be comfortable? I think some people, yes. But for the majority of the people, no, just because they don't know him."

- Carol Silwa



What It's Like To Work at...

## Consultant, Anyone?

PETER G.W. KEEN

**S**OME OF THE BEST COMPANIES I work with are consulting firms. And some are the worst, too. How does IT pick the best?

IT has always depended on strategic relationships with vendors and its heavy use of consultants to a degree that's

unmatched in any other field of business. That's because no company can go it alone. The best consultants either provide special skills, handle the ever-growing IT workload and provide development and integration capabilities or take on the management of large-scale projects. The worst consultants believe their companies are smarter than their IT clients, instead of recognizing that they're extensions of their clients' resources. Junior consultants in several well-known firms especially show this trait; it's part of their firms' core cultures.

It's this arrogance that rightly irritates many IT professionals. IT is buying the culture, not just the consultants and project capacity. Arrogant cultures make lousy partners and are in the rip-off business without realizing it. Because they believe they're so much smarter, they make many mistakes that the more collaborative and respectful consulting firms don't make.

For the large consultancies, you can easily track just where that arrogance is likely to show up: in the lawsuits against them. Almost always, you see legal action against a consultancy where a senior partner sold the work and is rarely seen again. The junior partners, who do the real work, get in over their heads but don't know enough to realize it.

Want to avoid a potentially bad experience with a large consulting firm and possibly having to take it to court? First, find out if it's facing any current lawsuits. Second, understand the firm's economics. You're paying for its overhead as well as its talent. The mergers among the giants assume that economies of scale justify the deals. That made sense in the era of the fairly homogenous corporate technology base of the early 1990s. I'm not so sure it does now. It creates horrendous overhead, complexity of internal coordination and a ferocious reliance on major large-scale projects to make money. That's why a senior partner who may have sold the job disappears. He has to sell a lot of time and materials labor at high markup, then hands off the work to junior partners.

Independent and boutique consultants have an edge in that they don't have overhead, they make their money on the work of their senior partners and don't dump the work on juniors. Their disadvantages are that they can't scale up and can easily get themselves involved in projects for which they have neither the management skills nor the resources. In my work with the megaplayers, I'm impressed with the quality of only about a quarter of their staffs.

All consulting firms can afford to pay salaries that are far higher than what a corporate IT organization should pay, and they can get the best talent, though they must increasingly offer more than attractive salaries (hence the race by these firms to make initial public offerings).

The giants can pay well because they have the size to spread the costs of superstars across many projects. And the independents can pay well because they don't have the overhead. But as the former try to be all services to all clients in all markets, they spread themselves thin and end up with more weak coverage of their skill gaps.

When selecting an IT consultant, look at a firm's record of how well it works with outside individuals, other specialists, consultancies and vendors. If it's a company that's very much NIH (not invented here) and doesn't make use of boutiques and independents for specific parts of the engagement, run. Too many consultants and consulting firms are overpriced and don't deliver value when you engage them. It's partly your own fault when that happens, so base your decision on the relationship you'll have with a consultant. Look primarily at its culture,

the way it bills clients and its collaborative skills.

Your firm will continue to use consultants. So use them well. ▀

Too many consultants and consulting firms are overpriced.



Keen (peter@peterkeen.com) is chairman of Keen Innovations (formerly The International Center for Information Technologies) in Fairfax Station, Va., a senior fellow of Differentis, a European B2B consultancy and a distinguished visiting professor at the University of Delft in the Netherlands.

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
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# The New Immigration Wave

Twice as many H-1B workers are entering the country as two years ago, primarily taking technology jobs. Beyond that, no one really knows what the impact is on the industry's skills shortage. By Sharon Watson

**T**HROUGHOUT MUCH of the 20th century, the industrial barons of Pittsburgh relied on immigrants and the sons of immigrants from all over Europe to work its steel mills, coal mines and railroads. Today, as the city builds its reputation as a 21st-century high-tech center, its companies still rely on the skills of immigrants.

That irony isn't lost on Lew Wheeler, CEO of Rapidigm Inc., a Pittsburgh-

based IT consulting firm.

"I grew up in a row house in a steel town surrounded by union guys," Wheeler says. But instead of building steel superstructures, Wheeler's firm helps clients with software infrastructures, from supply-chain management to e-business platforms. And instead of hiring millworkers from Eastern Europe, Rapidigm is searching for software engineers — and finding them in Asia.

"There's a tremendous shortage of software engineers in this country," says Wheeler. He and other sources say U.S. universities simply don't graduate enough software developers to meet industry demand. So of the approximately 1,000 engineering consultants Rapidigm will hire this year, Wheeler expects that 700 of them will be foreign-born and entering the U.S. under the H-1B specialty-occupation visa program.

Filling such shortages was the rationale cited last year among high-tech firms that lobbied for raising the annual H-1B visa cap. Last October, Congress increased the cap from 115,000 to 195,000 for the federal fiscal years 2001 through 2003, with the cap dropping to 65,000 in 2004.

Proponents of the increase said the availability of 585,000 H-1B visas over the next three years is vital to sustaining the U.S. technology industry's growth. Opponents claimed that the IT worker shortage was overblown and suggested that more visas meant more competition for U.S. IT professionals.

But while the rhetoric was loud, reliable statistics to support either view are scarce, making it difficult to analyze the impact of the H-1B visa program on the IT talent shortage. The Immigration and Naturalization Service (INS), which processes H-1B visas, has kept very few detailed statistics on the program — although since raising the visa cap, Congress has ordered the INS to do a better job of it.

"There is such a lack of INS information about the H-1B that it was nearly impossible to say how the H-1B would fit into the gap in IT worker supply," says Alan Merten, president of George Mason University in Fairfax, Va., and chairman of a National Research Council (NRC) committee that studied the U.S. high-tech labor shortage last year.

The INS estimates that it issued approximately 54% of its H-1B visa quota to technology workers in fiscal 2000, or approximately 78,000 individuals. However, because the INS occupation

categories are so broad, it's almost impossible to know precisely what types of IT jobs those H-1B candidates hold.

Yet discussions with immigration attorneys, analysts, immigration consultants and companies that hire H-1B holders reveal some evidence of the H-1B's effect on the IT labor market. In short, it seems the H-1B visas mainly address the shortages of technology workers for a relatively small niche of the overall IT workforce: hard-core software and hardware design skills for technology companies, IT contractors and consulting firms.

While some corporate organizations — which employ approximately two-thirds of the IT workforce — do hire H-1B applicants, the majority of H-1B hires go to technology hardware and software vendors.

At those firms, it seems that H-1B professionals do fill IT jobs that would otherwise go begging. But opponents still say the program harms the U.S. IT labor force.

Merten's NRC report committee heard testimony that not all H-1B recipients had the skills required for the jobs they were filling and that unscrupulous employers undercut wages for everyone by underpaying H-1B employees. Yet the committee's report points out that these charges were anecdotal; no one would provide details, making it impossible to investigate these claims.

Wheeler says that Rapidigm just can't find enough American software engineers and that the alternatives to using H-1Bs to fill his firm's jobs trouble him. "If we close our borders to foreign-born workers, the software development will just go to other countries," Wheeler says. "We'd rather import people to write the software than export those jobs."



## Paperwork Purgatory

To understand why H-1B holders are more prevalent in certain segments of the IT industry, it helps to understand some of the key provisions of the H-1B program.

Documentation requirements are one issue. For example, individuals don't apply for H-1B visas; employers do. As part of the H-1B petition process, employers must demonstrate to the INS that the job they're trying to fill is so specialized that it requires at least a bachelor's degree and that the H-1B petitioner's degree is directly relevant to the job being offered.

Further, an employer might need to document that all of its other employees in identical or comparable positions have degrees. These requirements tend to funnel H-1B holders to highly specialized positions.

In part, that's because corporate IT organizations are increasingly hiring or training people with non-IT back-

## Immigration on the Rise

Read across to see how many H-1B visas remain in effect from a given year. Read down to see the cumulative effect in a given year.

	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004
<b>FY1998</b>	325,000*	260,000	195,000	130,000	65,000	0
<b>FY1999</b>	136,888	136,888	136,888	136,888*	136,888	136,888
<b>FY2000</b>		145,000	145,000	145,000	145,000*	145,000
<b>FY2001</b>			195,000	195,000	195,000	195,000*
<b>FY2002</b>				195,000	195,000	195,000
<b>FY2003</b>					195,000	195,000
<b>FY2004</b>						65,000
<b>Estimated annual total</b>	<b>461,888</b>	<b>541,888</b>	<b>671,888</b>	<b>801,888</b>	<b>931,888</b>	<b>931,888</b>

\* Denotes year in which original visas would expire if three-year extension wasn't filed with and approved by the INS

1998 was the year in which the American Competitiveness and Workforce Improvement Act became law and temporarily raised the cap on H-1B visas from 65,000 to 115,000 in FY1999 and FY2000. This starting figure of 325,000 visas assumes all visas issued from 1994 through 1998 remained active for six years (5 x 65,000); thus the figure decreases by 65,000 in each succeeding year as visas expire. (The 65,000 cap level was established in 1990 and, by law, the U.S. may not lower the H-1B limit beneath that amount.)

grounds or degrees to fill positions requiring strong business and communications skills. Such companies would find it difficult to prove to the INS that those positions required specialized degrees as H-1B regulations require. It's much easier to meet the specialization requirements in hard-core technology areas like systems design and software engineering.

"An IT support organization often is looking for less cutting-edge people," says P.J. Ohashi, a senior technical recruiter at staffing firm Hall Kinion Corp.'s Bellevue, Wash., office. "These companies probably aren't going to do an H-1B sponsorship."

Throughout the petition process, which may last several months, the INS may require more information about the position itself, an employer's wage structure or the applicant's credentials. Immigration law attorneys point out

that many firms simply don't want to spend the time or the money necessary to assemble this documentation — or risk a Department of Labor investigation into their hiring practices.

"Many people are intimidated by what they need to do to hire a foreign professional," says Howard Skolnick, in-house counsel for SAI Software Consultants Inc. in Kingwood, Texas, which hires many H-1B holders.

"Some companies, especially smaller, cost-conscious ones, are reluctant to get involved because the process is so complex and cumbersome," agrees Andrew Lipkind, an immigration attorney in Buffalo, N.Y. He and other attorneys say legal fees may range from \$2,000 to \$3,000 per petition, with discounts for high-volume clients. "It's the expense of getting the best possible talent into your company," he says.

And that's the way a lot of compa-

nies view the H-1B process.

"We're just thankful to have access to as many talented technical specialists and engineers as we can," says Kent Jenkins, a Cisco Systems Inc. spokesman in Washington. Cisco sponsored 398 H-1B petitions in the first five months of fiscal 2000, according to the INS.

Immigration attorneys say that in addition to longtime users of the H-1B program, they're seeing more business from companies new to the H-1B process. Most are small technology firms, and some may submit only one or two H-1B petitions.

"If you need that one person who's crucial to your business, you'll go through the process," says a spokesman for the American Immigration Lawyers Association. ▀

Watson is a freelance writer in Chicago.

## H-1B Visas At a Glance

The H-1B work visa is issued for "specialty occupations" only. An applicant must be sponsored by an employer. The employer pays filing fees and, usually, legal fees. The application fee is \$1,110 per petition; \$1,000 of this fee is earmarked for technical education for U.S. workers.

Before filing an H-1B petition, an employer must receive an approved Labor Certification Application (LCA) from the Department of Labor. The LCA must show that the employer has advertised the open position to U.S. citizens and will pay prevailing wages to the H-1B candidate.

Specialty occupations are positions that require at least a four-year U.S. bachelor's degree or a foreign university equivalent related to that position, or education plus relevant work experience and responsibility equivalent to a degree.

H-1B visas are good for three years and may be extended for another three, on approval of an extension petition, for a maximum concurrent term of six years. After that, an H-1B holder must return to his home country for at least one year before applying for a new visa. However, an H-1B holder who has applied for U.S. citizenship at least one year before his last H-1B term is up may be granted one-year extensions on his H-1B while the INS processes a green card.

No per-country or per-company H-1B quotas apply. However, companies with more than 15% of their employees on H-1B status must prove to the Labor Department and INS that they aren't discriminating against U.S.-born employees. Also, companies may not lay off U.S.-born workers in H-1B-equivalent positions, then fill those positions with H-1B holders.

H-1B employees must receive salaries and benefits equivalent to those received by their U.S.-born colleagues. H-1B employees are "at will" employees, meaning that if their work performance is poor, employers are free to dismiss them.

H-1B visa holders are free to solicit job offers with employers other than their original sponsors. A "portability" clause in the revised regulations permits H-1B holders to start work immediately if they accept a new job; the old regulations required a new H-1B petition to be approved first. These job changes don't count against annual visa caps. Virtually all employers report that their H-1B hires eventually ask for their help in gaining U.S. citizenship. Many choose to help as a way of keeping valued talent.

— Sharon Watson

SOURCE: AMERICAN IMMIGRATION LAWYERS ASSOCIATION, WASHINGTON



WHILE GROWING UP in a working-class neighborhood in Pittsburgh, Lew Wheeler saw lots of immigrants enter the workforce. Now an IT consultant, he expects to hire 700 H-1B workers this year.

# Playing the Numbers Game

How many IT jobs are we giving to foreign workers? Nobody really knows. By Sharon Watson

**G**IVEN THAT MUCH of the IT industry is based on information design, structure and logic, it's ironic that a report last year by the Washington-based National Research Council (NRC) could find "no analytical basis" on which to offer recommendations about increases or decreases in the H-1B visa cap.

The necessary data about IT workforce numbers, shortages and H-1B candidates wasn't available from industry groups, employers or the U.S. Immigration and Naturalization Service (INS).

"Government data collection methods are too static to keep up with changing IT professions, and corporate and association data reflected only a partial view of the problem," says Alan Merten, president of George Mason University in Fairfax, Va., and chairman of the NRC committee that produced the report.

As for the INS, the only keeper of statistics on H-1Bs, Merten noted that the agency sees its primary role as case processor. "It doesn't see the role of the H-1B program in a bigger picture."

Still, after reviewing various data sources and collection methodologies, the committee settled on an estimate of about 5 million IT workers now in the U.S. Of those, the committee classified 2.5 million as Category 1 positions

— computer scientists, software engineers, and programmer/analysts.

Then, at the behest of Congress, the INS last June published a report of H-1B occupations based on a sampling of petitions it approved in the first five months of fiscal 2000. While the report calculated that computer-related occupations accounted for 54% of those H-1Bs, subcategories within that occupational group were ill-defined. Still, it appears that many H-1B holders fill Category 1 positions.

For example, H-1B employers use the job code "030" for systems analysis and programming occupations. INS statistics don't break that broad category down any further. Also, the INS report says its architecture, engineering and surveying category includes computer and systems engineers. The numbers for potential computer-related job subcategories suggest that nearly 65% of H-1B visas could go to technology professionals.

## How Many Are Here?

Then there's the question of how many H-1B visa holders are part of the U.S. workforce. Regulations governing the maximum annual number of visas to be issued haven't proved inviolate.

The INS admits to miscounting H-1B visa petitions in fiscal 1999 (Oct. 1,

1998, to Sept. 30, 1999). Based on an audit by KPMG Consulting LLC in New York, the agency concluded that it had approved 136,888 visa petitions that year, or 21,888 more than were permitted by the cap of 115,000.

The INS stopped accepting petitions for the 115,000 visas allotted for fiscal 2000 by March 21 last year; however, more than 30,000 petitions were still in the processing pipeline. Under the new regulations approved last October, those petitions don't count against either the fiscal 2000 limit or the new fiscal 2001 limit of 195,000 visas.

A spokesman says the INS has no up-to-date statistics available on the number of new H-1B petitions received for fiscal 2001 to date; however, through Jan. 5, the U.S. Department of Labor had received just under 5,500 Labor Certification Applications for fiscal 2001 H-1B petitions.

That said, by the close of fiscal 2000, nearly 542,000 H-1B holders may have been in the U.S. The INS doesn't track terminated or expired visas, so some of those visa holders may have gone home or gained citizenship.

Assuming future accurate INS counts, by 2004, when the H-1B cap is scheduled to drop back to 65,000, more than 930,000 H-1B holders could be part of the workforce.

"We didn't come up with any red-flag percentages about how many H-1B professionals in the IT workforce would be too many," says Merten.

Also, \$1,000 of the nonrefundable \$1,110 fee that must accompany each H-1B petition is being set

## Tech and H-1B

H-1B petitions by detailed computer-related occupations (data from 81,262 H-1B original petitions and petition extensions approved from October 1999 through February 2000)

OCCUPATION *	NUMBER OF WORKERS	PERCENTAGE OF TOTAL
Systems analysis and programming	37,686	47.4
Electrical/electronics engineering	4,256	5.4
Computer-related	3,127	3.9
Architecture, engineering and surveying	1,995	2.5
Miscellaneous professional, technical and managerial	1,531	1.9
Mechanical engineering	1,477	1.9
Computer systems technical support	829	1.0
Data communications and networks	638	0.8

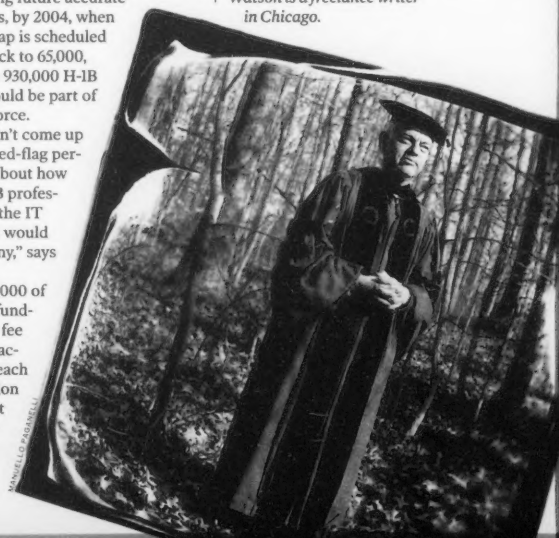
\* By Labor Certification Application code supplied by employer

SOURCE: IMMIGRATION AND NATURALIZATION SERVICE, WASHINGTON

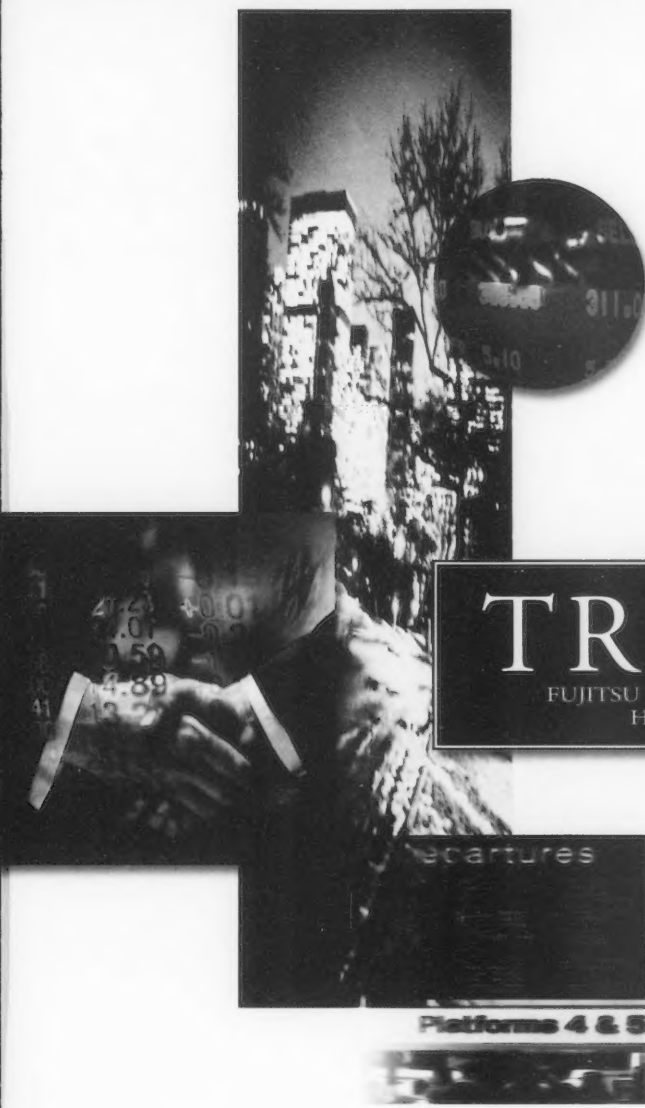
aside for a grant fund for training more U.S. workers in highly skilled positions. That adds up to a pot of at least \$585 million, given the availability of 585,000 visa slots during the next three years.

While changes in the law last year put some skilled professionals, including nurses, in their own visa category, those estimates do include non-IT professionals — and a few hundred fashion models, who lobbied to remain in the H-1B category. Still, if INS samples hold true, in 2004, more than 500,000 H-1B workers may hold IT jobs. They would also make up about 10% of the total IT workforce — a calculation consistent with predictions by the NRC study and research firm Gartner Group Inc. in Stamford, Conn. ■

Watson is a freelance writer in Chicago.



DESPITE THE GOVERNMENT'S WILLINGNESS to raise the quota of foreign workers in the H-1B program, it does a dismal job of tracking the need to do so, says Alan Merten (right).



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# Land of Plenty

Ask H-1B workers or candidates why they want to participate in the program and the answer is clear: Opportunities. By Sharon Watson

**W**HY WOULD A BRIGHT, talented software engineer from India want to leave his family and friends to work thousands of miles away in the U.S.?

"In the U.S., you can do whatever you want to," explains Vinod Cheriyan.

Cheriyan will graduate from the Indian Institute of Technology Bombay (IIT Bombay) in June and plans to move to the U.S. this fall to work at a U.S.-based IT consulting firm that's sponsoring his H-1B visa.

"The pay is better, but more important, I will be exposed to people of many different backgrounds," Cheriyan says. He expects such exposure to be useful in his long-term career goal of becoming a management consultant.

Though today's immigration is hardly on a par with the massive waves of people the U.S. admitted in the 19th and early 20th centuries, many of the same forces that motivated millions of Irish, Italian and Eastern European immigrants then are at work today among the tens of thousands of skilled professionals coming to the U.S. through the H-1B visa program.

Suvrat Lele, a classmate of Cheriyan's who is also scheduled to immigrate to the U.S. this fall, sums it up: "There are more opportunities."

## India in the Lead

India far outpaces any other country supplying H-1B professionals, with the Immigration and Naturalization Service (INS) estimating that Indian nationals account for nearly 43% of the H-1B visas issued in fiscal 2000. China lags in second place, at just under 10%.

Employers and immigration attorneys say India leads in H-1B numbers because English, a legacy of the country's colonial past, is widely spoken, which helps in technology circles. The nation also boasts a network of technology institutes modeled on MIT that prospective employers praise highly.

"Our students are much better than the U.S. recruiters expect," says S.K. Maiti, a professor of mechanical engineering at IIT Bombay and director of its placement program. Lele specialized in information design; Cheriyan is

skilled in several programming languages, including C, Fortran and Java. Students also have access to labs for creating applications for commercial software like SAP.

With large Indian immigrant communities already in technology hot spots such as Silicon Valley and in major U.S. cities, Indian H-1B holders say they're comfortable making the U.S. their temporary home.

## Homegrown H-1Bs

Some H-1B holders aren't recruited in their native lands but make the transition to H-1B status while studying in the U.S. Torsten Reinl, a native of Germany, took this route.

While still a college student in Seattle, Reinl interned at a large entertainment software firm. His position evolved into a job checking the German translation of a children's software game and writing and translating new dialogue. He liked the work so much, he asked his bosses if the company might sponsor an H-1B visa for him. They agreed, and today Reinl is a

foreign language quality-assurance analyst at the firm.

"The visa took some time and lots of documentation," Reinl recalls. That included providing industry-standard requirements for similar jobs, proof that his employer needed him, college transcripts and samples of actual work he had done, such as translated "readme" files. Reinl remembers being fairly calm throughout this process. "It was out of my hands," he says.

Then, when his H-1B was finally approved, Reinl had to leave the country to have a U.S. consulate put an H-1B stamp in his passport. "Fortunately, Canada is only two hours from here, so that was not too inconvenient," he says.

Reinl says his co-workers have sympathized with what he characterizes as "all the hoops" he's gone through to get the visa. "I am not taking any jobs away from anyone," he points out. "I also pay taxes, including Social Security taxes." In fact, one of the first things H-1B applicants must do is apply for a Social Security card.

## Other H-1B Sources?

For now, it's India that seems secure as the main source of H-1B candidates. No other country is even close.

That's in part because so many countries are trying to recruit high-tech specialists of their own. By 2004, the entire Asia-Pacific region will need more than 21 million IT professionals, with 7 million of them required in China, Hong Kong and Taiwan alone, says Stephanie Li, a senior analyst at IDC's Asia-Pacific regional office in Singapore. The region is already facing talent shortages, she says.

Similarly, the European Union has announced its own IT worker shortage, and Germany is creating a program similar to the H-1B to attract IT professionals, including those from India. But analysts say the U.S. is still the first choice for many emigrants.

"Immigration is at the top of populist political agendas in most EU countries," says Andrew Milroy, director of IDC's European Services Group in London. He notes that protectionist movements have responded with anger and demonstrations against Germany's visa program. Similar responses in other countries could easily make Europe less attractive

## Global Draw

Approved H-1B visa petitions by country of birth, October 1999 to February 2000 (includes new petitions and visa extensions)

COUNTRY OF BIRTH	NUMBER OF WORKERS	PERCENTAGE OF TOTAL
India	34,381	42.6
China	7,987	9.9
Canada	3,143	3.9
U.K.	2,598	3.2
Philippines	2,576	3.2
Taiwan	1,794	3.2
Korea	1,691	2.1
Japan	1,631	2.0
Pakistan	1,508	1.9
Russia	1,408	1.7
Germany	1,261	1.6
France	1,204	1.5
Mexico	1,011	1.3
Brazil	861	1.1
South Africa	838	1.0
Colombia	769	1.0
Hong Kong	738	0.9
Malaysia	722	0.9
Australia	644	0.8
Indonesia	635	0.8
Other countries	13,386	15.4
<b>Total:</b>	<b>80,786</b>	<b>100.00</b>

Note: The INS doesn't cross-reference occupational data with country-of-birth data.

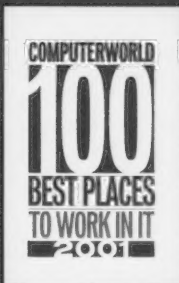
SOURCE: IMMIGRATION AND NATURALIZATION SERVICE, WASHINGTON

to emigrating IT professionals. Bona fide H-1B holders occasionally sense scrutiny as well. "You feel barely tolerated by the INS sometimes," says Reinl, even though his recent H-1B extension was easily approved. "It seems as though they would rather you didn't stay too long."

When Cheriyan's H-1B term is complete, he says, he intends to go back to India and start a business. He says he has only two worries about coming to the U.S.: "Climate and crime." ▶

TORSTEN REINL (right) is an example of the homegrown H-1B worker - a foreign student from Germany attending college in the U.S. who was recruited to stay in the country, under the H-1B program.





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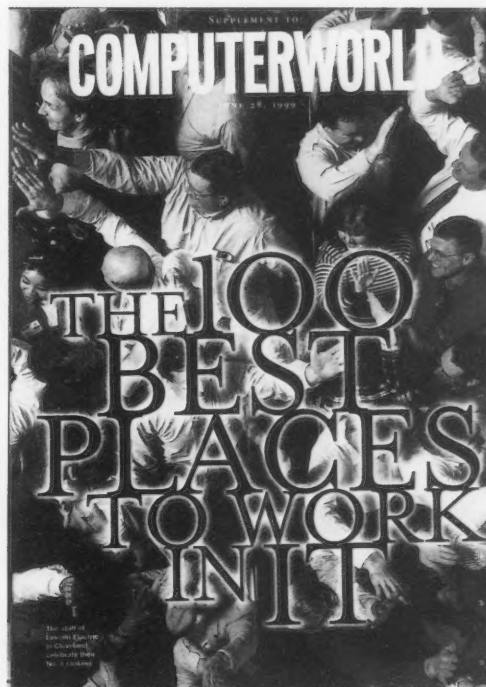
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# Putting CRM To Work

How to help your company break through the cultural barriers that impede customer-focused projects.

By Sharon McDonnell

**D**ID YOU HEAR THE ONE ABOUT THE SALESMAN who fell 190,000 transactions behind in using his company's customer relationship management (CRM) software?

It's no joke — just a symptom of the cultural challenges many companies face internally when they implement a CRM system with the goal of attracting and keeping customers and nurturing customer relationships.

"He crashed our server. He didn't think," says Jeff Koepfer, vice president of operations at Crane Engineering, a Kimberly, Wis.-based industrial equipment distributor, about the salesman who neglected to update address changes, read messages or input customer appointments for several days.

It also helps explain why there's such a high failure rate for CRM implementations. According to a recent report from Meta Group Inc. in Stamford, Conn., a staggering 55% to 75% of CRM projects fail to meet their objectives, often as a result of sales force automation problems and "unaddressed cultural issues" — sales staffs are often resistant to, or even fearful of, using CRM systems.

"Our biggest challenge was our sales guys — changing their habits, getting them to use it for planning. They'd make comments like, 'I don't have time to enter the information.' Some are afraid of using Windows, not to mention CRM," Koepfer says.

"Salespeople want to know what's in it for them; it's not enough to tell them they have to do it. But give them a panoramic view of what their customer is doing in call centers and on the company Web site,

such as buying other products or complaints. That's a very powerful motivator — they respond to revenue potential and growing their customer base," says Liz Shahnem, a Meta Group analyst.

Crane responded by urging employees to synchronize data daily with the company's server to prevent further crashes, requiring sales managers to ride herd on foot-draggers, and using peer pressure from salespeople selling different products to the same accounts. A cross-functional CRM steering committee meets monthly to discuss problem areas.

## Breaking Down Barriers

But companies face a bigger challenge: CRM is a mind-set — a business philosophy that reshapes a company's sales, marketing, customer service and analytics and presents a radical cultural shift for many organizations. Unfortunately, that doesn't occur magically once the software is booted up.

"It's a change from a product-centered or internal focus to a customer-centered or external focus. It's a change from a monologue to a dialogue with the customer; with the advent of the Internet, customers want to converse with a company. Also, it's a change from targeting customers to becoming the target. Customers are now the hunters," says Ray McKenzie, Seattle-based director of management consulting at DMR Consulting and author of *The Relationship-Based Enterprise* (McGraw-Hill, 2001), which contains a dozen case studies describing companies' use of CRM.


This switch means getting IT professionals to "think customer" and breaking down the barriers be-



tween IT and the employees who interact with customers. It also means structural changes in how the company operates, like sharing information and resources across departments and job functions, which translates into giving up control over who "owns" it; retraining employees in new roles, responsibilities and skills; and measuring their job performance, and even how they're paid.

"Companies that think of CRM as a silver bullet [that can] solve their problems fail. Too often, they see CRM as software, when it is merely an enabler, a tool in their tool kit," says Naras Echambadi, president of Quaero LLC, a CRM services consultancy in Charlotte, N.C.

"When has there been a technology that created or improved a customer relationship?" asks Bill Brendler, an organizational psychologist and president of Austin, Texas-based consultancy Brendler Associates Inc. "Technology is just a transactional thing; it's people who have to make a decision about it. Most of CRM doesn't work because the culture has to change first — 95% of separate departments in



**CHARLES PETERS** of St. Louis-based Emerson says his company tries to follow the "Jerry Maguire" school of marketing. "The customer is the money," he says.

roduction to a CRM system the company launched last year. Six of Emerson's 60 divisions now use the system, and 20 more are about to go live with it.

The company's IT staffers and customer-facing employees and executives meet regularly to discuss opportunities to create new business models and how to rapidly deploy applications to enable them.

"We try to follow the Jerry Maguire school of marketing: The customer is the money. Historically, we thought of the retailer, such as Sears, Roebuck, as our customer and totally depended on retailers to push our product out," says Charles Peters, senior executive vice president and e-business leader at Emerson. "But the Internet changes how we interface with the customer, how we manage internally, and makes it possible to do direct marketing. For the first time, we're talking to our true customer."

Emerson's actions are on target, analysts say. "IT should be sitting at the business planning table before the decision to get CRM and can help guide businesses by working hand in glove to lead CRM projects," Shahnam notes. "If IT is perceived as a provider of technology after the fact, CRM will not be successful."

IT professionals need to spend time with salespeople or call center employees and watch them work, says Eechambadi. "Even one day is valuable," he says.

The departments where cultural changes are needed most are the ones with which most customers interact, Eechambadi says. "If most customers interact through a call center, that's where the focus should be," he says. "Call center employees are often fairly minimum-wage labor trained to get off the phone fast to be more efficient. But there are huge opportunities for cross-selling in call centers. They can be trained not just to take a change of address or close an account but sell extra products, or persuade a customer not to leave."

### Commitment Is Key

Crane Engineering formed a cross-functional team with IT, sales and customer service staffers to hear sales automation software vendors' presentations and mutually decide on the desired goals. After a vendor was chosen in 1999, a cross-functional pilot was formed to iron out any kinks before the system was rolled out companywide. Two full-day training classes have been held since the initial implementation.

At KeyCorp, a Cleveland-based financial services company, CRM means changing the employee incentive system and having different departments share information and use common sales practices, says Bob Dutille, senior vice president of enterprise architecture. "We act as if a client of one part of the company is a client of the whole company and give more credit to cross-selling," he says.

Early last year, KeyCorp set up cross-functional senior executive councils based on areas such as consumer and commercial markets. Performance goals for all employees were outlined last summer. An integrated back-end data warehouse was set up to share customer leads across telephone, Web and Asynchronous Transfer Mode channels.

Another major challenge companies face: a lack of responsibility and commitment from top management to a companywide CRM strategy.

Pitney Bowes' Wilson wholeheartedly agrees. "If you don't have executive alignment and support — not just the CEO — the first time you come to a bump in the road, you'll be ready to jump ship," he says. "Don't even start CRM if they're not willing." ■

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## Nine CRM Planning Steps

Nine steps to help your company build a customer relationship management strategy:

1. Form cross-functional teams that represent the whole enterprise and are driven by the CEO.
2. Have these teams jointly develop a strategic CRM vision.
3. Make sure this vision is based on customers' needs.
4. Analyze CRM strategies of current and potential competitors.
5. Identify the capabilities needed to provide superior customer value.
6. Assess the capabilities you already have.
7. Identify business process changes, such as by mapping customer flow.
8. Build a change management plan. Figure out how employees are set up to deal with customers, what changes are necessary, how much training is required, what capabilities exist, whether people need to be added to the company or whether teams need to be built.
9. Implement CRM.

SOURCE: BRENDLER ASSOCIATES INC., AUSTIN, TEXAS

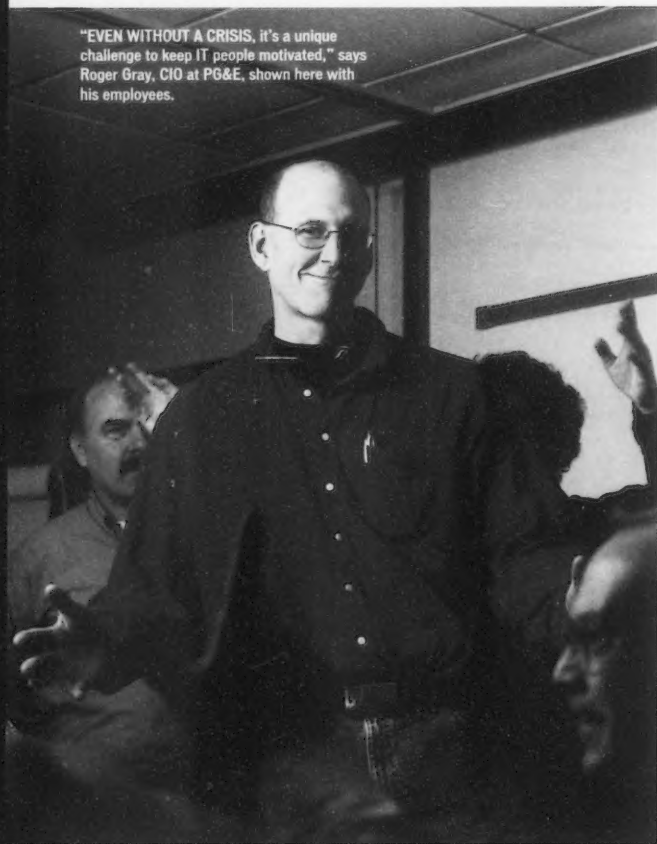
a company are focused on only one thing and have no clue who the customer is."

Some IT organizations have tried to tackle these problems head-on. At Pitney Bowes Inc., a Stamford, Conn.-based business equipment manufacturer, IT staffers met with customer-facing employees and focus groups to solve problems and jointly develop a CRM system salespeople could live with.

"The IT people loved getting out of their cubicles," says Russ Wilson, vice president of customer process re-engineering at Pitney Bowes. "How you establish your requirements and initial design is crucial. You need to understand how sales reps need the tools to do their job, which means a user-friendly GUI. IT people love pull-down menus — salespeople look at it and go, 'Aargh!'"

Emerson, a maker of electronics products ranging from air-conditioning system compressors to power-related supplies and tools, is deepening its customer relationships. Formerly known as Emerson Electric Co., the St. Louis-based firm held a three-day seminar for marketing staffers in 1999 that included an in-

"EVEN WITHOUT A CRISIS, it's a unique challenge to keep IT people motivated," says Roger Gray, CIO at PG&E, shown here with his employees.



# ENERGIZING THE TROOPS

Sure, high salaries and generous benefits are a good way to motivate IT employees, but inspiring them to reach their potential requires more than just cash. **BY MELISSA SOLOMON**

**I**T'S EARLY FEBRUARY, and throughout PG&E's San Francisco headquarters, there's a general sense of shell shock, says CIO Roger Gray.

"A few weeks ago, we hit rock bottom," he says, reflecting on California's energy crisis and Pacific Gas and Electric Co.'s financial woes.

All of which makes Gray's job more difficult than ever. Despite the growing number of layoffs around the nation, the IT labor market remains tight. So keeping his staff motivated and interested in their work is as complicated as it is critical.

"Even without a crisis, it's a unique challenge to keep IT people motivated," says Gray. "The challenge now is really staying focused on the work we have while everything's unfolding around you."

That's no easy task at PG&E, which, like rival utility Rosemead, Calif.-based Edison International, has lost billions of dollars during the past year from inflated energy costs due to the effects of deregulation on California's electricity market. But Gray's strategy is simple. He's honest with his staff, even when he has to deliver hard news. He provides news updates through morning and afternoon e-mails.

"I share the good, the bad and the ugly," he says. "If it's ugly, I'd rather them hear it from me than the news [media]. The minute they sense we're trying to pull the wool over their eyes, they'll walk."

For instance, will PG&E wind up filing for bankruptcy? If an employee asks the question, Gray says he won't rush to deny the possibility. Instead, he says, "You can tell people what bankruptcy is, and what it might be like to go through," preparing them so they'll be ready if it does come to that.

But while he tries to remain realistic about the situation, Gray says he's also optimistic. The average tenure for IT employees at PG&E is 20 years. Besides, he points out, the company has made it through everything from earthquakes to forest fires.

"We have a pretty long history of facing crises and being able to come back," says Gray.

## Going the Distance

Frank Hood, CIO at Krispy Kreme Doughnut Corp. in Winston-Salem, N.C., led his employees through a difficult period in 1997 when he came on-board and decided to overhaul the company's IT infrastructure. "We literally replaced everything," he recalls.

On top of that, he broke the news to employees that they had to be ready for Y2k by February 1999 because of

the company's fiscal calendar. "You just heard their jaws drop," Hood says.

Some employees left because they weren't sure they'd be able to adjust to the new environment, he says. But others took it piece by piece and surprised not only Hood but also themselves.

From that experience, Hood learned a few strategies for motivating his people. For starters, the Krispy Kreme IT team has a nonhierarchical structure, which gives projects a "grassroots" feel, he says.

One of Hood's most successful techniques is to support people while pushing them beyond their limitations. "What we've tried to do is say, 'We're going to gamble a little bit, we're going to take you to what you think is the cusp of failure and then we're going to back you up,'" he says.

The result? "You can hardly describe it," says Hood. "You can see it in their eyes. They dig it."

That kind of rush is more powerful than money or benefits for many IT employees, says Edward M. Roche, a New York-based chief scientist at The Concourse Group Inc., a Kingwood, Texas-based IT management consulting firm.

"Breaking the bounds, going where you're not supposed to, doing the impossible. Those are the kinds of things that really drive people," says Roche. "It's mountain-climbing syndrome."

## Hiring the Rebels

Walk through the doors of one well-known Silicon Valley e-commerce software firm and there aren't too many surprises, says Roche. Just standard office cubicles. Then it catches your eye: a Satanic altar with candle wax dripping down.

Turns out, the cube belongs to the chief programmer who develops most of the code for the company. "If I had someone like that, I wouldn't care what they look like or have in their stall," Roche says. Learning to look the other way when it comes to things like unusual work hours or personal grooming habits can go a long way toward earning the commitment and respect of IT employees, he says.

Mike Busch, director of IT at Patagonia Inc., an outdoor clothing retailer in Ventura, Calif., makes a point of hiring people with unique interests because he believes that bringing in the right kinds of employees goes a long way toward creating a motivational environment. For instance, he has a piano player and someone who restores vintage cars on staff.

"It helps me from the management side to know that people are really passionate about something," Busch says. "That gives me a good idea that they're going to be passionate about their work, too." ■

**IT LEADERSHIP**

# Intellectual Capital

BY CHRISTIE TAYLOR

**T**RACKING a company's physical assets is straightforward enough, as long as you're counting computers, adding salaries and estimating heating bills. But managing intellectual capital is a different ballgame, and one in which few companies consistently hit home runs.

Intellectual capital involves a company's employee expertise, unique organizational systems and intellectual property. More simply put, intellectual capital is knowledge.

While the more familiar term *intellectual property* accounts for trademarks, patents and copyrights, intellectual capital is the information stored in our brains. Managing it means corporate executives must balance cold, hard numbers and performance measurements with more strategic concepts such as capturing knowledge in expert systems and quantifying its value to the company.

For example, if a company's book value is \$10 per share and its stock is selling for \$40 per share, the difference is often attributed to intellectual capital.

"[When you subtract book value from market value], the remaining is all the intellectual and knowledge and market capital. It includes all the patents they might have and all other intangibles," says Vish Krishnan, associate professor of management at the McCombs School of Business at the University of Texas at Austin.

## Intellectual Capital Has Legs

Once a company identifies its intellectual capital, the next step is to maintain it. One way for IT managers to guard against losing intellectual capital is to have employees sign confidentiality agreements, which helps prevent trade secrets from walking out the door when employees do.

"The issue is, how long can you hold someone to a confi-

dentiality agreement?" says James Burger, an intellectual property attorney at Dow, Lohnes & Albertson PLLC in Washington.

Andrew Scott, vice president of IT at Edison, N.J.-based AeroGroup International Inc., which makes Aerosole shoes, says the best way to manage intellectual capital is to keep employees happy. For its part, AeroGroup allocates \$3,000 per IT employee annually for outside training and seminars.

"Very few people leave because they have more opportunity to learn somewhere else," Scott says. "It's because they gain so much they can take their salary to another level."

One of the techniques that Dollar Bank uses to manage intellectual capital is to keep employees involved in decision-making and planning, says Abraham Nader, senior vice president and chief operating officer at the Pittsburgh-based bank.

"You can't replace a human being with a computer," he says.

For example, the IT department sometimes becomes involved in marketing new products. This helps make IT employees feel like they're part of the entire process, Nader says, which is especially important because IT departments often feel isolated from what the rest of the company is doing.

Ron Griffin, CIO at The

## DEFINITION

**Intellectual capital** refers to a company's intangible assets that can't be measured the same way physical assets such as real estate, cash flow and equipment are calculated. The knowledge a company's employees have about its products and services — as well as the company's organizational systems and intellectual property — make up its intellectual capital.

“

You can't  
replace a  
human  
being with  
a computer.

ABRAHAM NADER,  
COO, DOLLAR BANK



Home Depot Inc., says the Atlanta-based home improvement retailer has tried-and-true structures in place for measuring, maintaining and growing intellectual capital.

The company uses a nine-box grid system to measure each employee's performance and potential, and it offers developmental courses to bring employees up to speed on certain issues. The categories measured include leadership ability, how an employee fits into the Home Depot culture,

financial acumen and project management capabilities.

Home Depot also holds business leadership programs for entry-level employees and offers a leadership development course for middle managers — all of which is aimed at expanding the company's intellectual capital.

But making sure employees are happy in order to retain them is only one way to manage intellectual capital. Creating expert systems by having employees share information — often through the use of computer systems — is another way companies can capture knowledge so it can be used once an employee moves on.

"Let's say you have an individual who knows a certain subject [such as customer relationship management] very, very well. You want to institutionalize that knowledge and to preserve it by capturing it in a computer," says Krishnan.

## Building Knowledge

For its part, Home Depot posts a bulletin on its intranet with quick references on topics such as how to repair a leaky toilet or build a deck. That way, knowledge is available for employees to remain up to speed and to pass such information along to customers.

"It's not just about selling product in our business; it's a lot of the knowledge, and we train on that extensively," Griffin says.

Patents enter the picture as a more familiar way to protect a form of intellectual capital. But the demand for patents is outpacing the rate at which they can be evaluated and issued, according to Diganta Majumder and Imran Shah at Zefer Corp., a Boston-based consulting firm. This situation has resulted in what Shah calls "a patent land-grab."

In December, Majumder and Shah hosted a panel discussion on how advances in digital technology are affecting product distribution in the entertainment industry. Their case in point was the controversy surrounding Napster and the way the site allows users to download music through the Internet free of charge. The panel also discussed ways in which film and other industries might be affected by emerging technologies.

Along with experts in the entertainment and Internet security fields, Majumder and Shah discussed future business trends and the need for standards and coalitions to protect intellectual capital.

For starters, they recommended being proactive by identifying intellectual capital and implementing ways to capture it.

"Napsterization" would have been unthinkable five years ago, but intellectual capital is not a new thing," Majumder says. "We're being aggressive and saying you have to plan beforehand."

If you don't, be prepared for your favorite graphics to appear on your competitor's Web site when your Web designer leaves, or to train a department full of people when your company reorganizes and there's no documentation on what employees did or knew before they worked for you.

And to play it smart, be sure to enlist the help of consultants and attorneys, if necessary. ▀

Taylor is a freelance writer in Houston. Contact her at [annataylor@msn.com](mailto:annataylor@msn.com).

JOE AUER/DRIVING THE DEAL

# Make Sure Consultants Will Keep Your Secrets

**C**ONFIDENTIALITY AND SECRECY AGREEMENTS between customers and outside consultants are very important. The nature of consultants' work means that they will probably have access to confidential information such as business and marketing plans, costs, profits and proprietary processes. So it's paramount to guard against having your confidential information disclosed to other outside parties, especially your competitors. Managing consultant confidentiality is a process that mustn't be overlooked.

You must exercise strong due diligence to initiate a workable consultant confidentiality program. First, identify the types of confidential information the consultants may have access to in the course of completing their engagements. Armed with this information, you can identify the potential risks that must be addressed. Obviously, the higher the potential risk, the greater the protection needed.

Many times, the risk issue isn't even considered. Worse yet, the risk has sometimes been dismissed with a statement like, "We know these people, and we can trust them." Even if you do know the consultant you're consid-

ering working with, there's no reason to abandon caution. The most trusted consultant can make an unintentional mistake and expose your information, particularly if there has been no reinforcement of confidentiality requirements.

If the due-diligence phase finds a potential risk, the next move should be to immediately enter into a confidentiality and nondisclosure agreement (NDA). This is a logical, precautionary step, and it's difficult to imagine a reason for a company not to take it. The NDA is a straightforward document describing the terms under which the customer and the consultant will and won't disclose certain information.

The NDA also provides a definition of confidential information (such as a certain process that gives customers a competitive advantage), each party's obligations regarding the information and a remedy if your consultant fails to live up to the agreement, either by design or by accident. Many times, it's best if the NDA is negotiated and put into effect well before the actual consultant agreement is in place, since precontract discussions may involve confidential customer information.

When the actual consulting agreement is drafted, include a confidentiality provision that references and incorporates the NDA. The NDA can

be very precise in nature, defining types of information, a certain project, a particular time period or specific remedies. The contract confidentiality provision should be wider in scope and should remain in force beyond the contract or engagement expiration — perhaps a year or more.

Finally, you should require that each consultant employee assigned to your account sign a personal "secrecy agreement." This provides an additional layer of protection and serves to make sure consultants are very aware that they will be receiving confidential information and are personally bound to protect it.

Some consulting firms balk at having their consultants sign secrecy agreements, saying there's no need to create separate contracts between each consultant and client. Try hard to win this one, but if you can't, a reasonable compromise is to make sure that the consulting firm agrees that each consultant assigned to your account has

previously signed a secrecy agreement with the firm or will sign one before starting work on your account. And don't forget to review the content of the firm's secrecy agreement to make sure it meets all your needs. Most important, have the consulting firm contractually accept full

responsibility for its employees' acts and omissions.

As a final safeguard, it's important to have "orientation briefings" for all of the consultant's people who are new to your account, to emphasize the seriousness of these issues.

Many large organizations already do NDAs, but they fall into the "pesky paperwork that's a mere formality" category and don't get highlighted as being a big deal. In my 35 years in this business, I've seen a number of confidentiality breaches that have been very big deals.

Recovering after breaches occur never seems to work as well as preventing them from happening in the first place. ▀



JOE AUER is president of International Computer Negotiations Inc. ([www.dobetterdeals.com](http://www.dobetterdeals.com)), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at [josa@dobetterdeals.com](mailto:josa@dobetterdeals.com).

## BRIEFS

### MIT Taps E-Business Elite for Recognition

Forty finalists were announced last week for The MIT Sloan 2001 eBusiness Awards. A jury comprising representatives from industry, academia and the media will make the final selections from the list of eight categories: eBusiness of the Year, ePerson of the Year, Best Supporting Actor, Global Reach, Rookie of the Year, Disruptive Technology, Social Responsibility and Business Transformation.

The finalists for eBusiness of the Year are AOL Time Warner Inc., Cisco Systems Inc., Enron Corp., Sun Microsystems Inc. and Wal-Mart Stores Inc. Those in the Business Transformation category are 7-11 Japan, Bloomsbury Publishing PLC, eTrade Group Inc., Siemens AG and

the U.S. Postal Service.

The winners are scheduled to be announced April 23 at MIT. For a complete list of finalists or for more information about the awards, visit [www.mitawards.org](http://www.mitawards.org).

### 2Roam Wins New Wireless Customers

Forbes.com Inc., Best Western International Inc. and Tribune Interactive Inc. last week each announced that they have selected the 2Roam Wireless Solution to deliver content to the wireless Internet, according to 2Roam Inc., a Redwood City, Calif.-based wireless software and service provider.

Phoenix-based Best Western will use the tool to give customers access to services not only prior to travel, but also while they're in transit to their final destinations. Tribune Interactive, a subsidiary of Chicago-based Tribune Co., initially

plans to offer eight new wireless sites. New York-based Forbes.com last week started offering its news publications via wireless devices, with possible plans to offer newsletters, stock quotes and financial calendars in the future.

### Study Reports Shift In Priorities for CIOs

As the economy continues to slow, maximum cost effectiveness and profitability are the key objectives of CIOs building IT programs, according to a worldwide study of 1,500 CIOs released this week by Stamford, Conn.-based Gartner Group Inc. "CIOs are becoming frontline business executives," said Andrew Rowsell-Jones, a research director in Gartner's Executive Programs. "Cost pressures are rated as the No. 1 global concern by businesses this year, and as a consequence, there will now be a much tighter

correlation between what IS does and how the business performs."

The survey revealed the following four IT management priorities: linking information systems to the business strategy and providing guidance to the board and executive councils; building capabilities by attracting and retaining quality people; demonstrating the value of IT through top-level program and project management; and delivering e-business capabilities through IT architectures and e-business process management capabilities.

### Graduates Keeping Faith in Dot-coms

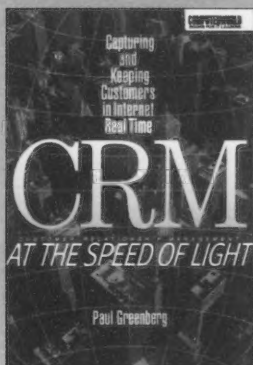
Despite the recent grim news among online companies, 40% of students would still be willing to work at a dot-com, according to the results of a study released last week by Jobtrak Corp., a Los Angeles-based online job-listing service

for students and alumni. The survey asked more than 1,000 college students and recent graduates if they would still consider working for a dot-com, based on current market conditions. Forty percent said yes, 29% said no, and 31% said they were never interested in doing so.

### Congress Nixes Ergonomics Bill

The U.S. Senate and House of Representatives last week both voted down ergonomic workplace rules issued by former President Bill Clinton shortly before he left office. The Occupational Safety and Health Administration (OSHA) rules would have required businesses to reconfigure offices and compensate employees for repetitive-motion injuries. The OSHA ergonomic standards were adopted in November 1999 and would have gone into effect in October.

## BOOK EXCERPT:



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SalesLogix, the leader in mid-market CRM — and ACT!, the best selling contact manager are divisions of Interact Commerce Corporation (Nasdaq: IACT).

### About Interact Commerce Corporation

Interact is the leading provider of relationship management software for mid market companies and small office/home office businesses. The company is known for building products that are easy to use, quick to deploy, and provide any-time, anywhere access to critical information. The company's products include SalesLogix, the mid-market CRM leader (customer relationship management) used by over 3000 companies; and ACT!, the best selling contact manager used by more than 3 million professionals and 10,000 corporations.

Headquartered in Scottsdale, AZ, the company can be found on the World Wide Web at [www.interactcommerce.com](http://www.interactcommerce.com)

**COMPUTERWORLD**  
BOOKS FOR IT LEADERS

# CRM at the Speed of Light

## Capturing and Keeping Customers in Internet Real Time

Authored by: Paul Greenberg

### Sales Force Automation: The Purpose

What is then expected of successful sales force automation? Not just the standard increases in revenue and margin. With the success of the "intangibles measurement" methodology represented by the Balanced Scorecard, there are means for quantifying measurements of customer satisfaction and sales force effectiveness that complement increases in the bottom line, as tangible as those increases are.

### Increased Revenue

Needless to say, this is the *ne plus ultra* result for SFA: improvement in the bottom line. But a gross increase is not a sufficient answer for SFA success. Just as important are the increases in revenue per salesperson and in the gross profits per year. If you have an increase of 100 percent in sales revenues but your cost of sales has increased, or it came strictly as a result of your increased sales force, your SFA implementation failed.

### Cost Reduction in Cost of Sales

Interestingly, this is a key parameter for success in an SFA implementation. There is an enormous amount of time used by salespeople in coordination of their efforts, continuous, repetitive data entry, and often unsuccessful attempts to extract and interpret data without the tools to do so. Studies have been done that show that sales time to fulfill administrative functions is almost half of a salesperson's activity. By reducing the time engaged in these administrative or other non-sales-related efforts, the cost of sales is reduced.

### Customer Retention Due to Company, Not Product or Service

If your customers are happy, they stay with you, even if they are paying a bit more. Myer Emco, a very successful customer home theater and con-

sumer electronics equipment installer, puts a large amount of time into making sure their customers get excellent service. They probably are 10 to 15 percent more expensive than comparable retail equipment dealers in the Washington, D.C., metro area. However, they have a loyal clientele willing to pay the extra cost, simply because the level of personal service is so effective. It's not about the money, it's about the relationship with the company and, often, the relationship with particular salespeople within the company.

### Sales Force Increasing Mobility

The Web is transforming as it creates the New Economy. Perhaps the best example is the increasing use of personal digital assistants (PDAs), such as the Palm or Blackberry's RIM for Internet access. Wireless applications companies are proliferating. Aether Technologies grew from 70 employees to more than 800 in a year, went public, started an acquisition binge and then, after all this, in late 2000, announced proudly that they had their first customer! Wireless Web applications and Web/phone convergence are creating an unprecedented buzz in an IT world that is known for its loud buzzing. Just recently, Handspring, the creator of the Visor PDA, announced that the Visor would have an add-in module that would plug into the back of its unique PDA that would allow Visor to operate as a cellphone. The sales force is out of the office more often than ever — meeting customers, moving through airports, prospecting for leads on Broadway with their PDAs. This is making mobility a competitive issue, requiring effective competitive mobile tools, such as the Internet and the handhelds. Most CRM companies are moving quickly to establish wireless components for sales, such as SalesLogix for Web phones and handhelds, Siebel

Wireless, or the wireless access to the various SFA.com portals.

### Easily Available Customer Information with Single View

There are multiple departments that have an interest in viewing the status of a customer account or opportunity. For example, the sales department wants to see the status of opportunities. The accounting department wants to see the state of invoicing and billing for the same accounts. The marketing department wants to see reports on varying degrees of success or failure of their campaigns with individual accounts.

Within each department are individuals with different roles who each have their own agendas for what passes through their crosshairs. The vice president of sales wants to see all the activity of all salespeople in his department, including their contact lists and opportunities. He also wants to get a sales pipeline report to refine his sales forecasts for the coming quarter. The account manager doesn't need that much. He wants a national view of all of the sales activity around the accounts he owns (for example, all the sales meetings and reports related to IBM or 3Com or whoever the customer happens to be at any given moment). The sales manager wants to see opportunity progress, but not all the contact lists of each salesperson. Each salesperson wants to manage the customer accounts he owns. Each of them has the individual view that allows them to see all the data they need to — that is, have the permissions to see — but at the same time, there is a universal view of all the data available to all departments at all times.

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# TECHNOLOGY

## HACK OF THE MONTH

Web sites are feeling the squeeze of achieving regulatory compliance as they face new privacy standards. Deborah Radcliff examines the growing public concern over Internet privacy and how government and industry are responding. **► 56**

## FUTURE WATCH

New technologies promise to make vehicles more secure and personalized, in addition to providing a world of information to drivers. **► 60**

## HANDS ON

Computerworld reviews five utility programs for the Windows platform, each designed to do one basic job — and do it well. **► 62**

## QUICKSTUDY

Digital signal processors are widely used for their ability to process audio, video and graphics streams. They're programmable microprocessors designed to manipulate in real time a communications stream of large amounts of digital data. **► 66**

## EMERGING COMPANIES

Start-up Access360's enRole acts as a central repository that allows rapid user-account creation and the provisioning of user-resource access rights across the enterprise. **► 67**



DON URSEM, vice president of network operations at VocalPoint, says, "Anything I can automate, I will."

## CONTROLLING CHANGE ON THE WEB

THE MORE IMPORTANT YOUR WEB SITE, the more reliable it needs to be, with the kind of rock-solid stability once associated only with mainframes in a data center. Keeping outages to a minimum requires managers to create standard change-management policies, automate changes as much as possible and outsource them if they must.

# 64

## BRIEFS

## Study Says Wireless Use Is Growing in U.S.

By 2005, more than 96 million users will be tapping into wireless mobile networks in the U.S., according to a study conducted by Jupiter Research. The New York-based research group said the vast majority of users, 74.9 million, will use "voice-centric handsets" to get wireless information, with the rest using other devices such as personal digital assistants. Individuals will largely be limited to services carried on narrowband networks, since broadband wireless systems won't be widely adopted until well into the future.

## Report: 'Significant Risks' in Online Voting

A National Science Foundation-sponsored report released last week on Internet-based voting systems said remote Internet voting - the ability to vote from home, work or anyplace with an Internet connection - poses a "significant risk" to the integrity of the voting process. The report, prepared by the nonprofit Internet Policy Institute in Washington, said security problems associated with these systems "are both numerous and pervasive." But the report said Internet-connected kiosks - such as voting machines located in malls, libraries or schools - that are under the control of election officials could be used to make voting easier.

## F-Secure Offers Linux Antivirus Firewall

Antivirus firewall software vendor F-Secure Corp. has announced a version of its software for Red Hat Linux Version 6.1 and higher that provides detection and disinfection of Web viruses and malicious code passing through firewalls. As with the San Jose-based company's firewall antivirus products for other operating systems, the software works behind the scenes and can be administered and monitored remotely by systems administrators, with attachments automatically scanned and disinfected without user intervention. F-Secure Anti-Virus for Firewalls on Linux starts at \$45 per user for 25 to 49 desks.

DEBORAH RADCLIFF/HACK OF THE MONTH

## No Laughing Matter

IF "CATHY" GETS IT, the masses do, too. In a Sunday comic strip in January, Cathy Guisewite summed up the quintessential consumer view of privacy and security in cyberspace (see below). In it, an embarrassed Cathy catalogs all the private information she has disclosed on the Internet.

In the final frame, Cathy sits behind her computer, wishing for "the new American dream: fifteen minutes of anonymity."

Massive awareness leads to change. And in the case of consumer privacy and security, change is already afoot in the form of forced adherence to privacy and security requirements.

IT professionals are already feeling the squeeze of achieving regulatory compliance. For example, with the April 16 start date of the Health Insurance Portability and Accountability Act (HIPAA), people like Frank Clark won't even start development on projects without first getting a nod from the company's legal unit. Clark is manager of network operations at Thaumaturgix, a managed services provider in New York that hosts servers for medical organizations.

HIPAA, the Children's

Online Privacy Act and the Gramm-Leach-Bliley Act are just the beginning, according to Andrew Shen, a policy analyst at the Electronic Privacy Information Center in Washington. "People in Washington are taking a hard, close look at more privacy regulations," he says.

IT managers at large companies are already preparing for an onslaught of regulations and standards, says Brian Tretick, principal at New York-based Ernst & Young International's privacy assurance and advisory services practice. They're conducting internal reviews to see where they may need to make improvements. And they're already more disciplined about their information usage, he says.

As for standards, Tretick is referring to measures such as the following:

■ The Information Systems

Audit and Control Association ([www.isaca.org](http://www.isaca.org)) in October 1999 published "Control Objectives for Net Centric Technology."

■ The International Standards Organization in Geneva approved ISO 17799, an international security standard, early this year.

■ The Center for Internet Security in Bethesda, Md., is planning to release security standards late this year.

But even with all the new regulations and standards, the most telling sign of change was the announcement two weeks ago about Visa's new Cardholder Information Security Program (CISP), which gives online merchants a May deadline for compliance.

With 12 security rules to adhere to and mandatory follow-up audits, CISP provides the most comprehensive e-commerce security rules to date, says Pete Lindstrom, an analyst at Hurwitz Group in Framingham, Mass. The guidelines require online merchants to install a network firewall, use and update antivirus software, and encrypt stored customer data.

The important thing about the Visa program is its power of enforcement, Lindstrom says, adding that "Visa can directly impact revenue by pulling your ability to process credit cards if you don't follow the program." Foster City,

## Polls Highlight Privacy Worries

Last August, 84% of 2,117 Americans polled said they were concerned about their personal information on the Internet, according to The Pew Research Center, a Washington-based nonprofit group funded by Philadelphia-based The Pew Charitable Trusts.

Last May, the Federal Trade Commission made its annual report to Congress about the information practices of online businesses. The report included a survey by New York-based Nielsen Media Research Inc. in which 92% of 40,000 people sampled said they were concerned about privacy on the Internet.

The report added that the "consumers most concerned about threats to their privacy online are the least likely to engage in online commerce."

- Deborah Radcliff

Calif.-based Visa's underlying interest is in getting more purchases online, he says.

And what's good for the consumer is good for Internet businesses. But it may not be so great for businesses trying to interpret and implement these changes, because legislators aren't the most technical folks around, contend Lindstrom and Clark.

"The big challenge," says Tretick, "is some of these laws require process changes in order to be implemented effectively. That's going to take time and money." ■



DEBORAH RADCLIFF is a Computerworld feature writer. Contact her at [deborah\\_radcliff@computerworld.com](mailto:deborah_radcliff@computerworld.com).



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# Zen and the Art of Intrusion Detection

*When you can't watch everything, tuning an intrusion system becomes more of an art than a science*

BY MATHIAS THURMAN

**I** CONFIGURED OUR intrusion-detection system (IDS) network sensors this week. For the software, I decided to go with Atlanta-based Internet Security Systems Inc.'s RealSecure. I'm familiar with the product, and with the limited resources I have in both my department and within our network operations center (NOC), RealSecure seemed to be the most appropriate choice at this time. The challenge lies in setting up the IDS so a security department with a staff of two can handle it.

A couple of the nice features of RealSecure are its point-and-click Windows-like operation and the X-express auto-update feature, which I'll explain. As new vulnerabilities are discovered, attack signatures need to be incorporated into the IDS infrastructure.

In an ideal world, I would have a team of skilled security engineers writing or obtaining the signatures and reconfiguring each network sensor with the new attack signatures. But this is the *real* world. RealSecure's update feature automatically downloads and installs signatures to the master console as they're released. Then it's just a matter of pushing policies containing the new signatures from the master console to each of the IDS engines.

## Simplicity Is Key

It's a very simple operation, and in my situation, simplicity is key. My plate is full: I am dealing with vulnerability assessments, SecurID token administration, antivirus efforts, a virtual private network, a firewall, Web trust audits, awareness training, abuse issues, policy development, physical security and more. I can't afford a highly managed IDS — not with only one other person and myself on staff.

Our internal network — like most

networks these days — is switched Ethernet, which is a problem with the IDS. Back in the old days, before switched Ethernet hubs were popular, you could simply plug your IDS sensor into a spare port on a hub. After configuring the network interface card in promiscuous mode, you could "snoop" or "dump" all the packets destined to or from any other machines connected to the hub.

In a switched environment, however, once the switch learns the media access control (MAC) layer address of the interface card on a port, it forwards traffic for that MAC address directly to that corresponding port. The MAC address is the one that's burned into each interface card at the factory. An IP address can change, but the MAC address will always be the same for that card.

Supposedly, every card in the world has a different MAC address. Since network traffic is directed to a specific port, other ports on the switch don't see the traffic. Switch vendors have realized that there are legitimate reasons why one would need to see all traffic copied to one port.

For example, packet analyzers need to see packets for troubleshooting purposes. San Jose-based Cisco Systems Inc. has a feature called Switch Port Analyzer (SPAN), which allows the network administrator to configure a switch port to analyze other ports on a switch. It's a fairly new feature, and most network engineers have never had to configure a SPAN port. So when you start talking to engineers to get their assistance in configuring IDS sensors, you'll have to provide a little education.

I've decided to use Sun Microsystems Inc.'s Netra T1 systems configured with 1GB of RAM and an 18GB hard drive as my IDS engine. I installed a standard Solaris 2.7 operating system, and then tweaked it to make it secure. Included in my tweaking: disabling Tel-

net and file transfer protocol (FTP); installing Secure Shell (SSH) for encrypted sessions; and installing a SecurID token agent from Bedford, Mass.-based RSA Security Inc. for digital token authentication.

I then disabled any service or application that wasn't needed for the IDS application. I also did some kernel modifications to harden the TCP stack. After I got the software installed and everything configured, I installed the Tripwire file integrity checker from Tripwire Systems Inc. in Portland, Ore. I do this when I know I have a pristine system, untouched by the Internet. I believe that it would be very difficult to hack my IDS engine.

The Netra systems are nice because they come with two built-in network interface cards. I like to configure one of the interface cards in what's called "stealth mode." All stealth mode really means is that the interface is invisible to devices on the Internet. To do it, I configured the interface card with an IP address of 0.0.0.0. The interface can't really route traffic, but it can be put into promiscuous mode and collect traffic.

I give a real IP address to the secondary interface card. It's this interface that serves as my administrative port for configuration and communication to my centralized monitoring and management station that resides in the NOC. Most vendors have made the initial installation and configuration of IDS software easy. For RealSecure, it's as simple as obtaining the software and executing the pkgadd command.

The most difficult aspect of configuring the IDS is tuning the engine and effective incident response. RealSecure gives you the ability to choose from among hundreds of events and attacks to monitor. The more stuff the software has to inspect, the less performance you're going to get. In addition, managing "false positives" is very time-consuming. The less your IDS must look for, the fewer false positives you'll have to deal with.

## The Secret Sauce

Here's my technique for IDS configuration and tuning. (Many readers will disagree, and if so, I would be happy to battle it out online in *Computerworld.com's* Security Manager's Journal forum.) I position my network engines to

## THISWEEK'S GLOSSARY

**Promiscuous mode:** A mode supported by some network interface cards in which the card can collect all packets that it sees on the network.

**Phf hack:** An old Apache 1.0 vulnerability that allows an attacker to execute arbitrary commands on a Web server.

**Windows Red Button attack:** A Windows-based attack that takes advantage of the fact that the "anonymous" user name is a member of the group "everyone" by default. Unsophisticated administrators may create shared resources that are available by default to this group.

## LINKS:

[www.enteract.com/~ispitz/papers.html](http://www.enteract.com/~ispitz/papers.html): Lance Spitzner's white papers are a great resource in securing your infrastructure. Although his documents on securing Solaris and Windows NT operating systems are mainly geared toward firewalls, they make a great reference material.

[www.cisco.com/warp/public/473/41.html](http://www.cisco.com/warp/public/473/41.html): Everything you ever wanted to know about SPAN ports can be gleaned from this most awesome document at Cisco's Web site.

[www.iss.net](http://www.iss.net): Web site for Internet Security Systems, maker of RealSecure.

monitor certain functional areas of my infrastructure. One engine will monitor my Oracle servers, another will monitor the front-end Apache servers and so on. For example, I now know that my front-end Apache servers are all running Solaris 2.8 with the latest patch cluster and the latest versions of Apache, WU-FTP and SSH.

Why, then, would I need to monitor for the old phf hack, which only affected Apache 1.0 back in late 1997? And why would I need to watch for the Windows Red Button attack? I have no Windows NT servers on this particular network.

Some would say that it's important to watch for attempts and perform event correlation. Again, if I had a small army of analysts or could afford a third-party response capability to watch all of the events and perform the event correlation, then I would watch for everything. I tune my engines by choosing attack signatures that represent a real threat to my systems. I can't concern myself with door wigglers.

As I'm running out of space, I'll discuss incident response next time. ■

■ This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. It's posted weekly at [www.computerworld.com](http://www.computerworld.com) to help you and our security manager better solve security problems. Contact him at [mthurman@hushmail.com](mailto:mthurman@hushmail.com) or head to the Security Manager's Journal interactive forum.



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*We Secure the Internet.*

**H**IGH-TECH gadgets that can turn your car into a vehicle James Bond or even George Jetson might envy are already starting to appear in luxury models, and more are on the way. With the use of biometrics and telematics — wireless technology for navigation, communication, entertainment and remote diagnostics — some of the vehicles that will soon become available promise to make driving easier, more secure and much more connected to the outside world than ever before.

The technology will also give new meaning to the term *customized*, as vehicles automatically screen those authorized to drive them and adjust themselves to drivers' needs and preferences.

You could one day be able to enter and start your car with the touch of a finger. And that same touch, with your fingerprint acting as a key, would trigger a check of the mirrors, steering wheel, radio and temperature to ensure that they're the way you like them.

The convenience of fingerprint recognition technology comes with heightened security. Unlike personal identification numbers, passwords and keys, each person's unique fingerprints can't be duplicated, lost or forgotten.

#### Ready, Set, Go!

In a vehicle equipped with fingerprint recognition, an embedded CPU is connected to a postage-stamp-size chip that contains a fingerprint scanner placed in the vehicle.

To initiate the fingerprint recognition process, designated users must enroll in the vehicle's personalization and se-

# Custom Cars For Every Driver

**New technologies could make vehicles more personalized and secure and provide a world of information to drivers. By Allison Wright**

curity system. One of the designated users is the "manager" and has the authority to enroll or delete other users.

During the 20-second enrollment process, a device scans the fingerprint and stores the data in the CPU, according to Anthony Russo, founder and distinguished staff technologist at Veridicom Inc., a biometrics company in Santa Clara, Calif. A mathematical template of the print that can't be reconverted into the original image is stored in the CPU.

The silicon sensors on the chip in the vehicle check the user's fingerprint against the stored template. If the print and the template don't match, the vehicle won't respond.

During the enrollment process, users will be able to identify certain individual preferences, such as seat adjustment, climate control and music selection.

"Fingerprint technology is the ultimate in personaliza-

tion," says Chris Flesak, a program manager at Visteon Corp. in Dearborn, Mich. Visteon is the chief hardware supplier for Wingcast Inc., a telematics firm recently launched by Ford Motor Co., also in Dearborn, and Qualcomm Inc. in San Diego.

With fingerprint technology, a manager can also limit other users' access to certain vehicle compartments or features. For example, if a manager doesn't want his teen-age daughter to surf the Internet while she's driving, he can deny her access to the Web appliance that will be part of the telematics package in the car.

The fingerprint scanner will be installed on the console, shift panel or instrument panel, depending on the vehicle model and manufacturer. The scanner can't yet be located on the outside of the vehicle because of factors such as weather.

Stuttgart, Germany-based DaimlerChrysler AG is one major automaker leading the way toward the use of smart

cards and fingerprint recognition systems for more reliability. About the size and shape of a credit card, smart cards will have embedded fingerprint scanners that will verify the bearer's identity and send a short-range wireless signal to unlock the doors. Users will



**BIOMETRICS** may soon let cars recognize a driver by his fingerprint.

have to be close to the vehicle for the card to work. Veridicom is developing a smart card with fingerprint recognition capabilities.

Telematics systems will be able to provide roadside assistance, driving directions, traffic reports and access to e-mail

and the Internet, according to Ronald Knockera, vice president of driver information systems at Siemens Automotive Corp. in Auburn Hills, Mich. Hands-free phone service, voice-recognition Internet access and other telematics will appear in vehicles in one to two model years, says Knockera.

#### Too Much Information?

But some analysts say that still won't be enough to prevent information overload for drivers. Paul Green, a senior research scientist at the University of Michigan Transportation Research Institute in Ann Arbor, Mich., has proposed "workload managers" for drivers. These systems would monitor driving demands moment by moment and adjust the flow of information to the driver accordingly.

For example, e-mail messages and phone calls would be held while a driver negotiated a highway entrance during rush hour. He could later check his messages at stoplights and on stretches of straight road with little traffic.

Green points out that the sensors needed to make such a system work are already being installed in luxury cars with telematics systems.

In the past few years, new biometric recognition technologies have become cheaper and easier to use. At the same time, the wireless infrastructure necessary for telematics has been developed.

"A lot of new technology is only available in high-end vehicles initially, and then it filters down to all types of vehicles," says David Ladd, manager of marketing communications at Siemens Automotive. "That will eventually happen with this technology." ■

## How Telematics Systems Work



In-vehicle systems can be built-in or added through connections for cell phones or personal digital assistants.



Onboard systems get information from a GPS satellite or a cellular-network-based location system.



Location information from the vehicle is transmitted via a wireless network carrier to...

... a service provider that sends back content — such as traffic, weather or news — tailored to the driver and the car's location.



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# Useful Utilities, Handy Helpers

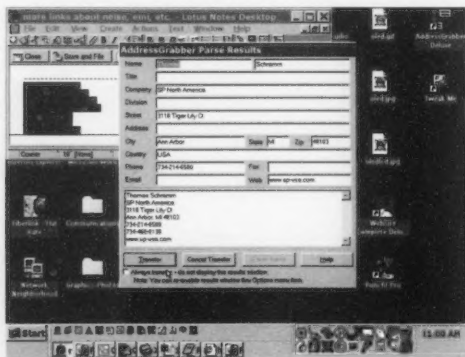
**Narrowly focused programs can make life simpler and easier by doing one job well. By Russell Kay**

When a piece of software promises to make my life and work simpler, I'm eager to try it out. Each week, I get word of three to six small utility programs. Many of them are shareware, meaning you can try them out for free before you buy them. Most, in my experience, turn out to be of very limited use. But a few are extraordinarily helpful because they either do something wonderful or they do something fairly trivial but necessary in a tidy and efficient way.

## Quick! Grab That Address

The first of these programs is also the most recent I've found, Address Grabber Deluxe, by eGrabber Inc. (www.egrabber.com) in Saratoga, Calif. Suggested by a colleague, this \$49.95 program is one of the handiest items I've seen in a long time. Basically,

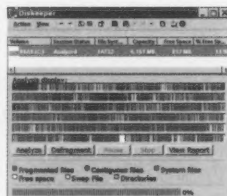
you just highlight a name or address block in any window, then click on the Grabber button. The program captures the copy, looks it over and figures out what the name, title, company, phone number or e-mail is and presents it to you for an OK. Then, with a single additional click, it sends the information to your address book. Why didn't someone think of this before?



EGRABBER'S Address Grabber Deluxe allows you to highlight a name and other information, then register it in your address book.

## Disk Housekeeping

As I put more and more data and applications on my hard drive, the amount of free space gets smaller and smaller, and performance begins to suffer as files get increasingly fragmented. Regular disk defragmentation becomes more important than ever. Built-in defraggers come with all versions of Windows, but they don't always work very well, and they don't work at all if you don't have a sizable chunk of free space (like 30% of your hard drive). In the past, I've turned to Norton Speed Disk from Symantec Corp. as an alternative, but I've since found a much better product: Executive Software International Inc.'s Diskeeper 6.0. This Glendale, Calif.-based company has produced the fastest, most intelligent defrag program I've ever used, and it can operate with an astonishingly small amount of free space. Better yet, it works with Windows 2000. It comes in both server and workstation versions, starting at \$49.95.



DISKEEPER 6.0 is an impressive defrag program for \$49.95.

You can download both versions from [www.executive.com](http://www.executive.com).

## The Oh Sh--! Button

For years, the Undelete function in Norton Utilities was a valuable tool for any computer user — and a lifesaver for someone who had accidentally deleted a critically important file. While the Recycle Bin that started with Windows 95 has eliminated some of the need for that, it's still true that some file deletes never get put into the Recycle Bin and are thus really unrecoverable — especially if you're running Windows NT. But Executive Software has produced another useful \$49.95 utility called Undelete 2.0. It works with Windows NT and Windows 2000, and it's available in server versions.

## Virtual CD-ROM

OK, I confess: I'm a solitaire addict. Oh, not the standard Windows solitaire, but a package I bought for \$10 at Staples some years ago. The only problem is, it won't run any of its 40 solitaire games unless the CD is in the drive. Now, because I review computer products, I normally use several different computers each day. And more than once, I've found myself with time to kill

while on a trip, and the CD wasn't in the drive. It was in another computer or at home or maybe packed away in my checked luggage — or the laptop didn't even have a built-in CD-ROM drive. But I've found a \$30 answer to that problem, and it's also useful for carrying reference CDs with you. By using Paragon CD Emulator from Paragon Technologie GmbH in Buggingen, Germany, I can create a "virtual" CD drive on my computer, copy a CD image to it and run it anytime from the hard drive. Not only is it more convenient, but it also runs faster. This program is also available in a network version for running on a server. Check it out at [www.paragon-gmbh.com](http://www.paragon-gmbh.com).

## Thumbnail Specialist

Jasc Media Center Plus 3 is a well-done program for organizing digital graphics. Created by Jasc Software Inc. in Eden Prairie, Minn., which also produces Paint Shop Pro, this program uses the photo album metaphor, but it does a very fast job of creating thumbnails so you can really see what's in an album — or what's in a folder full of images with meaningless, camera-generated file names like DC100243.jpg. There are hundreds of programs like this available, and I haven't checked them all. But of the ones I've seen, Media Center is the most useful. It lets me



JASC'S MEDIA CENTER PLUS 3 organizes graphics, much like a photo album.

add comments and keywords to individual pictures, making them searchable. Media Center isn't a substitute for a full-blown image database like Portland, Ore.-based Extensis Product Group's Portfolio 5, but at \$39.95 (\$29.95 at [www.jasc.com](http://www.jasc.com)), it's not priced like a full-blown database. ■



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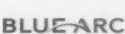
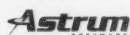
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**S**TEVE ETZELL saw for himself how quickly a minor unauthorized change can foul up a Web site.

Etzell, director of Web technology at Select Comfort Corp. in Minneapolis, was on vacation when he got a call telling him the bed maker and retailer's Web site performance had gone "into the tank." The reason: A developer had let a business group user "twist his arm" into dynamically generating user-specific price quotes on a Web page that showed an entire category of Select Comfort's products. The site had previously sent users to a cached page that showed the same prices to everyone.

That change "seemed fairly innocuous," Etzell recalls. But the page "is accessed potentially 100,000 times per day... and you'll bring the server to its knees" by forcing it to dynamically create the page for each visitor, he adds.

"About an hour later, they realized what they had done and turned the caching back on" for the category page, says Etzell. The long-term answer was to remove prices from the categories page and instead put them on Web pages that describe specific products. Since those are accessed far less often than the categories page, the site can deliver customized pricing without taking a huge performance hit.

#### Balancing Act

It's that kind of unplanned, untested change that Web site managers hate and users love. Managing change on the Web is a "balancing act" between the need to keep your very public Web site up and running and the need to update it often enough to keep it attractive to visitors, says Etzell.

The more important your site, the more reliable it needs to be. The more transactions you do, the more it needs the kind of rock-solid stability once associated only with mainframes in a data center. Keeping embarrassing and costly outages to a minimum requires IT managers to create standard change-management policies, automate them as much as possible and outsource them if they must. Repeatable, consistent procedures, performed either by skilled support staff or automated tools, are the best way to cope with the pressures of a public-facing Web site.

The Web environment is unique because users demand changes within hours, not weeks. Changes to content aren't done by database administrators who first check the validity of the data and its effect on site performance, but by marketing managers. There's no single mainframe vendor to release updates or patches on a regular schedule, but rather a half-dozen or more suppliers that find and fix flaws in their products on their own schedules.

Then there's security, which can require major changes to sites as hack-

# You Want To Change What?

**Need to give your Web site the reliability of a mainframe? Then standardize and automate your change-management processes. By Robert L. Scheier**

ers discover new ways to bring them down. "There's a lot more changes going on in these Web-facing systems, with most of those relating to security," says Jason Lochhead, co-founder and chief technology officer at Data Return Corp., a Dallas-based managed hosting company. "You didn't have to worry so much on legacy systems because they're isolated from public traffic." Microsoft Corp. acknowledged in late January, for example, that its defenses had been inadequate after it was hit by denial-of-service attacks two days in a row. In response, Microsoft planned changes to its network architecture, including a backup set of domain name servers (DNS).

Even routine, planned changes can crash a site if they're done incorrectly. Just days before the hackers hit, Micro-

soft suffered a 22-hour outage that left many of its Web sites unavailable. The company blamed the problem on a faulty configuration change to the routers on its DNS network.

When Don Ursem compares the reliability of his Web site with that of the telephone system, he isn't kidding. Ursem is vice president of network operations at VocalPoint Inc., a San Francisco-based application service provider that lets consumers access Web sites via phone by converting HTML into voice responses. VocalPoint sells the service to telephone companies and in vertical markets such as health care. For the end user, "it's a telephone application," not a computer application, and "you expect your telephone to work all of the time," says Ursem.

But that's easier said than done.

First, there's the volume: VocalPoint leases two T3 data lines, each of which can handle 644 simultaneous incoming calls and needs 135 servers to process them. Then there's growth: As VocalPoint adds T3 lines, Ursem expects that he'll be managing about 650 servers across three sites by June.

VocalPoint rolls out a new release of its voice Web-browsing software every three months and is converting about 30 Windows NT servers to Linux to support a new text-to-speech engine.

Then there are routine upgrades and patches to the databases, operating systems, network switches and EMC Corp. Symmetrix storage-area networks. Each must be tested for its effect on the system, rolled out in a coordinated way and tracked so that if any updates backfire, the offending change can be pulled out of produc-



DON URSEM of ASP VocalPoint: "I don't want things done manually by gangs of people. Then you would suffer from human inconsistencies."



DAVID J. MILLER

tion. And such caution is warranted. According to a survey conducted last year by Framingham, Mass.-based IDC, 46% of IT managers said software updates gone wrong played a role in their site outages.

Ursem, a former mainframe data center manager, ended up outsourcing to Intira Corp., a managed service provider in Pleasanton, Calif. The selection came after a grueling examination of seven San Francisco Bay area outsourcers to see how they matched up with his goals of outsourcing and automating change management.

Ursem wanted a service-level agreement that covered not only the servers and network, but also the incoming T3 lines and their links to the servers. He insisted on choosing his server hardware and software, which ruled out many outsourcers that require customers to use standard offerings.

He also insisted that the outsourcer's staff follow written procedures and that he have access to an online monitoring tool to ensure that those procedures were being followed. (For security reasons, Intira won't let Ursem into the data center running his applications.) Ursem demanded and got contractual commitments "that there would be no changes made to my environment without my prior approval," including updates to network switches, storage environments or software drivers.

Intira monitors the operation of its systems with Hewlett-Packard Co.'s OpenView, which would have been bogged down if Ursem had also used it to do continuous, real-time monitoring for any changes in every server.

Using StatePoint Plus, a change-management tool developed by Monroeville, Pa.-based Westinghouse Electric Co. for its own use and now sold to other companies, "I have the ability, from San Francisco, to link into the Intira data center and compare any set of servers against a reference server" to find and investigate any unexpected changes, Ursem says.

"I don't want things done manually by gangs of people," says Ursem. "Then you would suffer from human inconsistencies. I'm looking to reduce that. Anything I can automate, I will. Anything I can outsource, I will."

#### Old Rules, New Game

Select Comfort has built a multi-tiered process for making changes to its site, which can get as many as 8,000 unique visitors per day.

It created a content-management application that five people in marketing can use for live updates of information such as product descriptions and availability. But "we really try to keep the control tight," says Etzell.

Select Comfort follows a mix of written and unwritten rules, such as "don't change things at peak use time if you

## Outsourcing Change Management

When you pay a service provider to run your Web site, you're counting on it to do vital change management, version control and testing. To evaluate a vendor, Don Ursem, vice president of network operations at VocalPoint, suggests asking these questions:

► Are your database administrators at your data center or in a remote office?

► Is your data center staffed by dedicated operations specialists or by consultants from your technical services business?

► Can you guarantee that you won't make any changes to my environment without my prior approval?

► What tools will you provide me to do real-time monitoring to ensure that no unauthorized changes have been made?

► Do you have written policies for how to handle both planned changes and unplanned problems?

don't have to." This select group of users can make changes either live on the site immediately or to a staging server, where changes can be reviewed before going live. The company also does weekly batch updates of changes, as well as a "major monthly push" in which more complicated functional changes (compared with content-based changes) are put into place, says Etzell.

Like Ursem, Etzell has taken pains to document the change-management procedures for his environment, which includes Windows NT 4.0 servers and SQL Server 7.0 databases, as well as Austin, Texas-based Vignette Corp.'s StoryServer 5. He says he also tries to make sure everyone on staff knows who is responsible for which parts of the infrastructure so they can be notified of changes that might affect them.

The strongest change-management processes, says Etzell, were adapted from those already used by the technical services group responsible for Select Comfort's backbone enterprise resource planning, financial and other systems. These processes cover changes to infrastructure hardware and software, with written test plans before an update is put into service. But even then, "some arm-twisting goes on, and we'll change something on the fly," Etzell says.

Keeping those exceptions to a minimum is part of the art of change management. It's when you try to "short-circuit" your own procedures, Etzell says, that you get into trouble — which can mean a nasty wake-up call for the entire business. ▀

Scheier is a freelance writer in Boylston, Mass.

# Digital Signal Processor

BY TOM THOMPSON

**E**VERY MODERN computer has a microprocessor in it, but not many have a digital signal processor (DSP). Since the CPU is a digital device, it clearly processes digital data, so you might wonder what the difference is between digital data and a digital signal. Basically, *signal* refers to communications — that is, a continuous stream of digital data that might not be stored (and thus might not be available in the future) and that must be processed in real time.

The digital signals can come from almost anywhere. For example, downloadable MP3 files store digital signals that represent music. Some camcorders digitize the video signals they generate and record them in a digital format. And the more sophisticated cordless and cellular phones typically convert your conversation into a digital signal before broadcasting it.

## Variations on a Theme

A DSP differs markedly from the microprocessor that serves as the CPU in a desktop computer. A CPU's job requires it to be a generalist. It has to orchestrate the operation of diverse pieces of computer hardware, such as the hard disk drive, the graphics display and the network interface, so they work together to perform useful tasks.

This agility means that a desktop microprocessor is complex — it must support key features such as memory protection, integer arithmetic, floating-point arithmetic and vector/graphics processing.

As a result, a typical modern CPU has several hundred instructions in its repertoire to support all of these functions. This requires that it have a complex instruction-decode unit to implement the large instruction vocabulary, plus many internal logic modules (termed *execution units*) that carry out the intent of these instructions. As a result, a typical

**DEFINITION**

A digital signal processor (DSP) is a special-purpose programmable microprocessor designed to manipulate in real time a communications stream of large amounts of digital data in order to improve its quality or modify it in specific ways. DSPs are widely used for processing audio, video and graphics streams.

desktop microprocessor contains tens of millions of transistors.

In contrast, a DSP is built to be a specialist. Its sole purpose is to modify the numbers in a digital signal stream — and do it quickly. A DSP's circuits consist mainly of high-speed arithmetic and bit-manipulation hardware that can rapidly modify large amounts of data.

As a consequence, its instruction set is much smaller than that of a desktop microprocessor — perhaps no more than 80 instructions. This means that the DSP needs only a slimmed-down instruction-decode unit and fewer internal execution units. Moreover, any execution units that are pre-

sent are geared toward high-performance arithmetic operations. Thus, a typical DSP consists of only several hundred thousand transistors.

As a specialist, a DSP is very good at what it does. Its myopic focus on math means that a DSP can continuously accept and modify a digital signal, such as an MP3 music recording or a cell phone conversation, without stalling or losing data. To help improve throughput, DSPs have extra internal data buses that help shuttle data among the arithmetic units and chip interfaces faster.

In addition, a DSP might use a Harvard architecture (maintaining completely physically separate memory spaces for

data and instructions) so the chip's fetching and execution of program code doesn't interfere with its data processing operations.

## Why Use DSPs?

A DSP's data-wrangling capabilities make it ideal for many applications. By using algorithms steeped in the mathematics of communications and linear-system theory, a DSP can take a digital signal and perform convolution operations to enhance or reduce specific characteristics of that signal.

Certain convolution algorithms enable a DSP to process an input signal so that only desired frequencies appear in the

processed output, implementing what's called a filter.

Here's a real-world example: Transient noise often appears as high-frequency spikes in a signal. A DSP can be programmed to apply a filter that blocks such high frequencies from the processed output. This can eliminate or minimize the effects of such noise on, say, a cell phone conversation. DSPs can apply filters not only to audio signals but to digital images as well. For example, a DSP can be used to increase the contrast of an MRI scan.

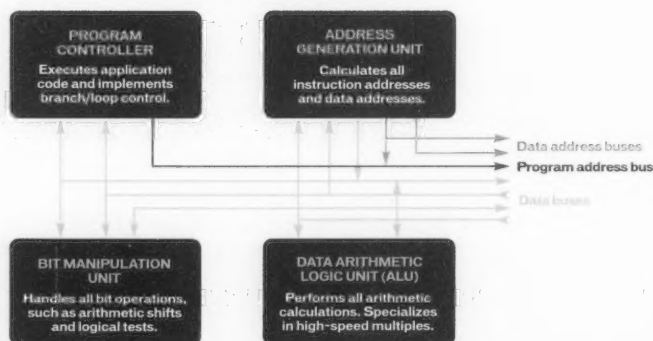
DSPs can be used to search for specific patterns of frequencies or intensities in a signal. For this reason, DSPs are often used to implement the speech-recognition engines that detect specific sequences of sounds, or phonemes. This capability can be used to implement a hands-free phone system in a car or allow your child's robotic pet dog to respond to voice commands.

Because they have far fewer transistors than a CPU, DSPs consume less power, which makes them ideal for battery-powered products. Their simplicity also makes them inexpensive to manufacture, thus they're well suited for cost-sensitive applications. The combination of low power use and low cost means that you can often find DSPs in both cell phones and that robotic pet.

At the other end of the spectrum, some DSPs contain multiple arithmetic execution units, on-chip memory and extra data buses, allowing them to perform multiprocessing. Such DSPs compress real-time video signals for transmission over the Internet and can decompress and reconstitute the video at the receiving end. These expensive, high-performance DSPs are often found in videoconferencing equipment. ▀

Thompson is a training specialist at Metrowerks. Contact him at [Thompson@Metrowerks.com](mailto:Thompson@Metrowerks.com).

## Inside a DSP



This diagram illustrates the core of a Motorola DSP 5680x processor. The separate program, data and address buses help boost throughput by enabling simultaneous code and data fetch operations. A secondary data bus enables the ALU to read two data values, multiply them and perform an accumulate operation in one clock cycle.

# Getting a Grip on User Access Issues

*Access360 centralizes the management of user access rights across the enterprise*

BY DAVID ESSEX

TEMPORARY workers are critical to the Omaha Public Power District (OPPD) during power outages, but they pose special problems for Ron Workman, OPPD's supervisor of information protection.

Workman must provide temporary passwords and user names for as many as 200 contractors, as he did last month during a cleanup and maintenance check of the Fort Calhoun Station nuclear power plant in Nebraska. And users must be set up quickly. OPPD pays \$500,000 per day for replacement power during downtime, and it loses thousands more if contractors are kept waiting.

Until three years ago, Workman used homegrown software for managing user-access accounts for OPPD's temporary workers and 2,400 employees. Then OPPD moved to enRole software from Technologic Software Concepts Inc., a consulting firm in Irvine, Calif. Workman says enRole squeezed turnaround time down from a week to about six minutes, freeing staff to spend more time monitoring security.

"It's meeting our requirements, and it's meeting them very well," Workman says, naming occasional and very minor bugs as the software's only faults. "It runs and runs and runs."

## What EnRole Does

EnRole's developers left in January 1999 to form what's now Access360, also in Irvine. Today, flush with more than \$70 million in venture capital funding, the company sells enRole to a growing list of major customers like BP Amoco PLC in London and ETrade Group Inc. in Menlo Park, Calif.

EnRole lets administrators rapidly respond to changing employee roles or add and re-

move rights for temporary workers or extranet partners, all from a single management console. EnRole unifies each user's profile and access privileges in a central repository so administrators don't have to track scattered accounts for different applications and operating systems. Then it auto-

matically performs the tasks each application requires to sign up or remove users.

"Every large or medium or fast-growing business has a number of computing platforms that are in place, as well as many, many people trying to access those applications," says Access360 President and CEO Yuri Pikover. "Somebody, somewhere, somehow needs to keep track of it all."

Besides the repository, the two other main components of

enRole are a workflow engine, which contains rules that decide who has rights to which applications, and "software agents," which let enRole work with more than 55 major operating systems, databases, e-mail platforms and enterprise applications.

"The [enRole] app server is essentially a workflow engine," Pikover says. "When it detects a change, it will then issue a command to an agent to provision that user appropriately."

## Well Positioned

Access360 seems well positioned to exploit two growth areas: application service providers (ASP) and companies building what Pikover calls "virtual enterprises" using business-to-business systems. Both must quickly and efficiently define who has rights to use particular applications.

"People just become part of a B2B trading community, but no one is solving the provisioning problem," Pikover says. "You end up defaulting to the lowest common denominator." With enRole, he says, companies can provide finely tuned access.

To serve both markets, Access360 is working on a more scalable, distributed version of enRole for shipment later this year. Also in the works is an ASP-based service called Access360.net that the company will pilot this quarter and launch by midyear. "We're also branching out to extend the provisioning to noncomputing entities such as credit cards

and cell phones," says Jeff Drake, Access360's founder and executive vice president. Access360 won't likely fail from a lack of demand. "[Managing user access is] a problem that everybody has," says Chris Christiansen, an analyst at IDC in Framingham, Mass.

Neil Goldman, director of Internet computing strategies at The Yankee Group in Boston, describes Access360 as a strong player in a small but important niche. "[Managing user access] is a big problem for companies," Goldman says. "The question is whether the pain is bigger than other pains companies have right now." ■

Essex is a freelance writer in Antrim, N.H.

## the buzz

STATE OF THE MARKET

## Direct Assault

Access360 faces competitive assaults from a small group of vendors of centralized security administration software, say analysts. Most of these companies also compete with players in mainframe access management.

### BMC Software Inc.

Houston  
www.bmc.com

BMC claims to have 150 customers that use its Control-SA software to manage provisioning, sometimes for more than 100,000 employees.

Like Access360's enRole, Control-SA uses a centralized data repository to allow administrators to manage users' access rights according to their roles. It also has password-management and workflow modules.

The differences between Control-SA and enRole are in their architectures and "technical robustness," claims Gary Leibowitz, director of BMC Software's InControl business unit.

### Courion Corp.

Framingham, Mass.  
www.courion.com

Courion focuses on password proliferation. The company's PasswordCourier is a self-service application that lets employees perform tasks that normally take 30% of a help desk's time, such as resetting passwords. A second product, ProfileBuilder, lets a company's employees, business partners and customers manage their own profiles, which provide personalization data and are used to authenticate their identities.

"The other vendors are really focused on accounts," says Courion Vice President Tony Rose. "For true self-service, you need user authentication."

### Systor Security Solutions Inc.

Greenbelt, Md.  
www.systorsecurity.com

Keith Girt, managing director at Systor, says the company takes a mainframe-oriented approach while supporting multiplatform client systems. Systor's customers include large firms in both the U.S. and Europe.

Its main product, Security Administration Manager (SAM), uses an OS/390-based central repository, which Girt says gives it a scalability advantage over competitors. SAM also manages passwords and has a workflow engine for automating requests to change a user's status, two other key functions of enRole and Control-SA.

- David Essex



ACCESS360 CEO Yuri Pikover (right, with founder Jeff Drake): "The [enRole] app server is essentially a workflow engine."

## Access360

**Location:** 15440 Laguna Canyon Road, Irvine, Calif. 92618

**Telephone:** (949) 255-3100

**Web:** www.access360.com

**Niche:** Resource-provisioning management

### Why it's worth watching:

Turnover, the complexity of enterprise software and the growth of Web networks are fueling demand for access management.

### Company officers:

- Yuri Pikover, president and CEO
- Jeff Drake, founder and executive vice president
- Jeff Curie, director of enterprise strategy
- Anne Barrette, vice president of research and development

### Milestones:

- January 1999: Enable Solutions spins off from Technologic Software Concepts Inc.
- December 1999: EnRole 2.0 is

released.

- April 2000: Company name changed to Access360.

**Employees:** 260

**Burn money:** \$70 million from Crosspoint Venture Partners, Oracle Corp., VeriSign Inc. and others

**Products/pricing:** EnRole sells for \$30 to \$50 per user per year, plus an 18% annual licensing fee.

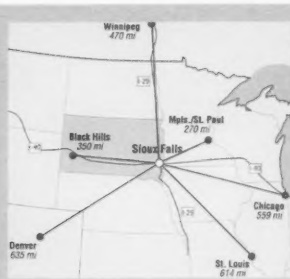
**Customers:** AOL Time Warner Inc., BP Amoco, ETrade and more

**Partners:** Check Point Software Technologies Ltd., Entrust Technologies Inc., Oblix Inc., Oracle, RSA Security Inc. and more

### Red flags for IT:

- Competes directly with larger, more established firms like BMC Software Inc.
- Support for a wide range of applications puts the onus on Access360 to keep its provisioning agents up-to-date.

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# The Simpler Life

**Smaller cities such as Sioux Falls, S.D., hold new charm for restless IT professionals who want a change from high-pressure jobs and high costs of living. By Eric Sherman**

**W**ITH THEIR subzero winters, the hills of Sioux Falls, S.D., may not sound like a destination to warm the heart. But they were a welcome change for Darwin Tenhaken a year ago, when he took a job managing a new division at Training Partners Inc., an IT education facility.

Tenhaken relocated with his family from Des Moines, Iowa, to Sioux Falls, which has almost 70,000 fewer people and is about 15 degrees colder. But he isn't regretting the frigid temperatures for a second.

"I grew up with the temperatures, and sick as it may sound, it doesn't bother me," says Tenhaken. "[And] I like the area, the friendliness of everybody."

No one could mistake South Dakota's largest city for Silicon Valley, and it's certainly no refuge for sun worshipers. But a growing number of IT professionals like Tenhaken are moving to areas like Sioux Falls.

For some, small-town living and a focus on family simply weigh more heavily than concerns about a stymied career. And those with at least a few years of work experience can find technically interesting jobs, along with a low cost of living.

Tenhaken says he found that he wasn't sacrificing anything in his move. "For day-to-day living and what you want to do, it's got all the same feature sets [as larger cities]," he says.

## Good for Companies

Companies are also finding what they need in the region. Steve Kurtenbach, CEO of Bay Technology Group Inc., originally started his company in San Francisco, after working at Andersen Consulting for a dozen years. But he was born and raised in South Dakota and, after a return visit, moved his new company to the state in the fall of 1998.

Although Sioux Falls is relatively small — it has a population of approximately 128,000

— Kurtenbach knew technical people who were as good or better than those he had met in larger cities around the world. And the Web has allowed his firm access to business from companies in larger metropolitan areas.

"By the nature of e-business, it doesn't matter where you're located," says Kurtenbach.

For those job-seekers not yet enticed by e-business, two major industries in the region are health care and retail, as Sioux Falls is a regional center for people from southwest Minnesota, northwest Iowa and the rest of South Dakota.

Financial firms, such as Citibank, and their back-office call centers are also major employers. San Diego-based Gateway Inc. and Hutchinson, Minn.-based Hutchinson Technology Inc., a manufacturer of hard-drive components, are big employers as well, though both have seen business slowdowns. Yet unemployment in the area is still less than 2%, with positions and potential employees almost completely matched.

There's a good supply of network administrators and technical-support personnel, according to Thane Paulsen, general manager of BrightPlanet.com LLC, an Internet content company. "There's a smaller talent pool in Sioux Falls for [developers]," says Paulsen, though he's been able to hire the people he's needed.

## Lower Cost of Living

Although the talent may be of the same quality, potential salaries are lower than in many parts of the country. For example, a client/server programmer with at least four years' experience could expect an average national salary range of about \$70,000 to \$84,000 annually, according to Wellesley, Mass.-based Salary.com Inc. The same position in Sioux Falls would pay from \$63,000 to \$76,000.

In a major market such as Chicago, the low end of pay would start where the top Sioux Falls salaries leave off. Salaries for senior network administrators tell a similar story,

with two to four years' experience bringing from \$52,000 to \$65,000 in Sioux Falls but \$57,000 to \$72,000 nationally.

Yet the drop in salary may not take a major toll on lifestyle. Sioux Falls' cost-of-living index is approximately 15% below the national average, partly because there's no income tax. According to a comparative salary calculator from Westlake Village, Calif.-based HomeStore.com Inc., an income of just less than \$50,000 in Sioux Falls would be equivalent to \$100,000 in Chicago.

An average three-bedroom house costs slightly more than \$110,000, and rent for a two-bedroom apartment runs about \$600 per month, though housing availability is tight.

"We saw a house in the morning, looked at two other houses, then came back at 2 p.m. and it had sold," reports Brian Bjork, who relocated from Omaha and now works at Sencore Inc., a manufacturer of test equipment in Sioux Falls.

But Bjork found a house, and his family now enjoys local sports teams, arts-and-crafts shows, a per-capita crime rate that's less than half the national average, a nine-mile commute that takes 10 to 15 minutes during rush hour, and many parks and pools.

He describes Sioux Falls as having a "small-town atmosphere with big-city amenities."

In short, Bjork and his wife found the area to be a good place to raise a family. Outside of the tight housing market, the biggest drawback is that the temperatures are lower than what he was used to.

"Snow doesn't bother me; it's the cold and windchill," says Bjork. ▀

*Sherman is a freelance writer in Marshfield, Mass.*

## Sioux Falls at a Glance

**Top IT jobs:** Programming and network administration

**Top IT skills:** C++, Java, Oracle, proprietary packages for call centers, Cobra (a language used in the insurance business)

**Major industries:** Health care, retail, banking, manufacturing

**Salaries:** C++ programmer: \$45,000, with two years' experi-

ence; Oracle database administrator: \$60,000, with five years' experience

**Corporate culture is stable and very "Midwestern."** Business casual is the dress mode, but don't expect "a lot of the blue-hair, ponytail types working in IT," says Jeffrey Wilcox, a sales consultant at Key Executive Placement in Sioux Falls.

**The recruiter's view:** Wilcox sees steady growth for the IT market in Sioux Falls for the near future. Some technology manufacturers, like Hutchinson Technology Inc. in Hutchinson, Minn., have laid off production workers, but IT has remained stable. Programmers are in high demand, since potential employees from other areas are often put off by the severe winter weather. For an edge in the market, have experience with programming call centers, says


Wilcox. Also, mainframe experience goes a long way in this area.

## The workforce is stable.

Wilcox recently interviewed three programmers, each of whom had had only two different jobs in a 15-year span.

**Companies don't try to poach one another's employees,** so if you want to change positions, be active and don't wait for a recruiter's call.

— Erik Sherman



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You will be responsible for very quickly gaining a conceptual grasp of the ZAPNET suite of software applications and implementing release test procedures. 2 years experience in commercial software testing in UNIX and NT environment is required. Familiarity with bug tracking, test-automation tools, knowledge of Rational, Winrunner TSL and shell QA scripts, Relational Databases, UNIX and NT Operating System concepts and command syntax is a plus.

## IMPLEMENTATION CONSULTANTS

Join the Consulting Services and be responsible for the installation/configuration of the ZAPNET application suite of software, report development, solving technical product issues and client training. BS/BA in IT and a minimum 60% domestic travel is required.

## CLIENT SUPPORT SPECIALISTS

Use Your Relational Database Experience In A Key Support Role! Support services include customer issue resolution & problem tracking, 24/7 emergency coverage, shift work, help-desk assistance, upgrade and license distribution. Strong knowledge of SQL and UNIX with 2+ years experience and a broad knowledge of ORACLE v7 or v8, Sybase System 11 and Informix. You must also be well versed in PC/UNIX.

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The International Atomic Energy Agency in Vienna, Austria, is seeking a Network Engineer to head the Network Support Unit located in the Computer Services Center, Department of Nuclear Energy.

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Silicon Valley Technology Summit  
 Santa Clara, CA  
 June 20-21, 2001

Issue Date: June 4, 2001

Space Reservation: May 4, 2001

Short Close\*: May 9, 2001

WITI Regional Chapters  
 Various Locations  
 Various Dates

Issue Date: August 20, 2001

Space Reservation: July 27, 2001

Short Close\*: August 1, 2001

East Coast Technology Summit  
 Boston, MA  
 October 24-25, 2001

Issue Date: September 24, 2001

Space Reservation: Aug. 31, 2001

Short Close\*: Sept. 5, 2001

\* You may still advertise in the publication after this deadline; issues will still be sent to the Technology Summits.

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Chicago, Illinois 60605  
Attention: Lydia Clarke  
Reference # VIL 24143-E AN EMPLOYEE PAID AD  
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**Senior Consultant:** Will work in various unanticipated locations throughout the U.S. Plan, develop, test and maintain computer systems, including its database, for manufacturer, retailer, insurance, bank or government. Provide technical support and train users. Use at least half of the following: AS/400, AS/400CL, RPG/IL, RPG400, DB2/400, RPG/IL, Cobol, and Sybase 2E. Reqs: 3 yrs exp in the job offered. \$40,433/yr. 40 hr/wk, 8a-4:30p. M-F. Mail resume to: Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117, and refer to order #JL1117369. Application is by resume only.

**Oracle DBA:** Will work in various unanticipated locations throughout the U.S. Manage Oracle RDBMS in Unix or OS/2 operating system. Install, test, and upgrade logical and physical databases. Troubleshooting and performance tuning. Develop backup and recovery procedures. Enforce security against unauthorized access. Use PL/SQL scripting for downloads from the mainframe. Develop PL/SQL scripting for reconciliation between different databases. Reqs: 4 yrs exp in the job offered. \$40/hr, 8a-5p, 40hrs/wk. M-F. Mail resume to: Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117, and refer to order # JL1117366. Application is by resume only.

**Data Base Administrator (2 positions):** Will coordinate physical changes to computer data bases and code, test and implement the data base applying knowledge of data base management systems. Will design logical and physical data bases and coordinate data base development. Will utilize Oracle. Requires Masters Degree in Information Systems Management, Computer Science, Engineering or Mathematics. Requires 2 yrs experience in job offered or 2 yrs experience as Systems Analyst, Programmer Analyst or Software Engineer. 5 day 40hr/wk, \$61,965/yr. Please mail resumes to Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to order number JL 1117287.

**Software Engineer, 2 pos.** Englewood, CO and other unanticipated loc in US. Apply d/vmt, modification & testing of s/ware implement projects. Perform broad range of bus analysis & liaison w/ bus & data processing mgmt to formulate & define system scope & objectives. Prep detailed specs from which prgms will be written & design, coding, testing, debugging & documenting those prgms. Initial system s/ware & its customization to specific client's reqmts. Respond to unanticipated s/ware & engg anomalies using C++, DB2, Oracle, SQL & Reportwriter. M.S. (or foreign deg equiv) Comp Sci/MIS/CIS or CO Dept of Labor & Employment, Attn: Jim Shimada, Tower 2, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117, ref to JL1117219.

**Computer Positions:** National Instrument's Corp is a fast growing Hi-tech Co based in Austin, TX and is currently seeking to fill multiple positions in the following:

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Research, design & develop s/ware in mainly C/C++ using OO design & s/ware design principles. Must have Bachelors in Engg, or Comp Sci or Physics or Math. CODE: ZSW

## Applications Engineers

Develop applications for products, systems and new business opportunities. Provide technical support for software products and their applications to customers, sales engineers, and distributors. Resolve technical issues using an understanding of electronics and software programming fundamentals. Must have Bachelor's in Engineering or Computer Science, or Physics or Math. CODE: ZAE

## Computer Hardware Design Engineers

Research, design & manage projects in data acquisition, signal conditioning, industrial communication, instrument ctrl, image acquisition, embedded controllers & ASIC prdcts using design techniques in analog & digital circuit design, comp architecture, communication bus interfacing & digital signal processing. Must have Bachelors in Engg, Comp Sci, or Physics or Math. CODE: ZHE

## Programmer/Analysts (Business Processes)

Plan, analyze, design, develop & test s/ware using Oracle, Lotus Notes, Web; use GUI & object-oriented design to develop user interfaces & data entry screens that support business functions. Bachel in Info Sys or Comp Sci or Business Admin. CODE: ZPA

## Staff Programmer/Analysts

Evaluating applications development projects, leading a team of Programmer analysts/interns, planning, analyzing, design, coding & testing s/ware using Oracle & Lotus Notes; using GUI & object-oriented design to develop user interfaces & data entry screens. Bachel. needed and 2 years as Programmer/Analyst. CODE: SPA

Fax resumes to: Rebecca Inoué, National Instrument Corp at 512-683-6924. Job Code must appear on resume.

## SENIOR PROGRAMMER ANALYST

This position is in Naperville, Illinois with client in client server technology using Visual Basic, Sybase and RDBMS concepts. Proficient in object oriented methodology and develop standardized coding; will design, architect, and implement client server applications; use third-party tools available for use with Visual Basic 4.0; responsible for documenting and performing necessary upgrades. Duties performed using Visual Basic 4.0, Visual Basic 3.0, Sybase, MS Windows 3.11, Windows 95 and NT.

Requires BS in Computer Science or related field (or equivalent foreign degree) and at least one year experience as Programmer/Analyst. 40 hours per week, 8 am to 5 pm, \$60,000 per year. Applicants must show proof of legal authority to work in the U.S.

## Send resumes to:

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401 South State Street  
7 North, Chicago, IL 60605  
Attn: Joanne McDaniel  
Ref. #VIL 24312-N

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**Consultant/Programmer/Analyst:** Job location: Phoenix, AZ. Duties: Develop web applications. Provide input during the system/database design & analysis phase of a project life cycle. Develop, enhance & debug Client/Server applications. Participate in testing procedures by creating test data, running test scripts, performing regression testing & debugging. Requires: B.S. in Comp. Info. System, Comp. Sci./Info. Sci. or related field. Coursework must include classes in Computer Information Systems Analysis. Send resume to: Carmen Strickland, marchFIRST, Inc., 311 S. Wacker Dr., Suite 3500, Chicago, IL 60606.

**CamSoft, Inc.** is seeking an IT Manager to recruit IT engineers and assess their tech skills; analyze client req's and prepare proposals for clients. Oversee project execution by providing appropriate resources; design, develop and maintain company website. Req: MS in Comp. Sci, Eng or related field and one year software dev exp. Send resume to: Cam Soft, Inc., 3000 Scott Blvd, Suite 109, Santa Clara, CA 95054.

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**Operations technician** needed for multi media communications company located in Denver, CO. Job duties include: Support network operations including Operations Center Fiber Optic, Digital Cross Connect, Switching, Data Surveillance and Monitoring Systems. Manage system implementation projects. Develop Oracle and SQL databases. Use Developer 2000. Design and develop web interfaces to report data. Compile manual and automated network data. Assist users and management on database. Work as part of a team under direct supervision. Applicant must have B.S. degree in Computer Science, Business, Engineering, or Mathematics. Equivalency to degree acceptable based upon recognized standards using combination of education and exp. Applicant must also have 6 mos. exp in the job duties described above or in any computer related occupation to include use of Oracle database and Developer 2000 and have coursework and/or exp. designing web interfaces to report data. 40hrs/wk, 8am-5pm, M-F. \$45,000/yr. Send resumes & cover letter to: Colorado Department of Labor & Employment, Employment Programs, ATTN: Jim Shimada, Job Order #JL1117466, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117.

**Consultant (Database Administrator),** Job location: Westwood, MA. Duties: Install & create database using RDBMS packages like Oracle & Sybase. Install client & database soft on various servers & workstations. Perform performance monitoring & auditing. Devise strategies for logical & physical backups of production databases. Perform data encryption & decryption. Import & export data between databases. Prepare scripts for database creation, mgmt., & performance reporting, maintenance of database objects & data integrity using PL/SQL. Requires: M.S. or foreign equiv in Comp. Sci./Info. Sci., Bus. Admin. or related field plus 2 yrs exp. in the job offered or 2 yrs exp. as a Senior Engineer. Exp. which may have been obtained concurrently, must include: 1 yr. exp. using PL/SQL, Oracle & Sybase. Send resume to: Carmen Strickland, marchFIRST, Inc., 311 S. Wacker Dr., Suite 3500, Chicago, IL 60606.

**Object Computing, Inc.** www.ocitweb.com Software Engineer (St. Louis, MO, multiple positions) for cutting edge distributed, real-time software development. Advanced degree (or BS plus 5 yr. progressive exp.) with skills in at least two of the following: OO, Java, C++, UNIX, CORBA, ORB, XML. Competitive salary. Send application to hr@ocitweb.com or fax to (314) 579-0065. EOE

**Software Engineers** (multiple positions) sought by Illinois-based Comp S/ware Consultancy Firm. Must have Bachel or equiv in Comp Sci or Engg & 1 yr s/ware exp. Respond to: HR Dept., Pegasus Knowledge Solutions, Inc., 1111 Plaza Drive, Suite 310, Schaumburg, IL 60173.

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Dallas, TX 75252

**Programmer/Analyst:** 40 hr/wk, Mon to Fri, 9am to 5pm, \$70,000/yr. Design Development, Implementation, Maintenance and administration of various software systems on HP-9000 based Unix computers using Sybase as relational database. Require 3 years experience in job offered. Applicants must show proof of legal authority to work in the U.S. Apply to Illinois Department of Employment Security, 401 South State Street, 7 North, Chicago, Illinois 60605, Attention: Brenda Kelly; Reference #VIL 25204-K. An Employer paid Ad. No Calls. Send 2 copies of both resume and cover letter.

**Fidelia, Inc.** a software dev co in Denver seeks Systems & Netw Adminr to administer Unix systems and design & implement netw topology for operations systems infrastructure. Send resumes to: Clarke Legler, 700, 17th St., #100, Denver, CO 80202 or email to Jobs@fidelia.com.

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**SOFTWARE CONSULTANT** Design, devlop, code, test software applications. Work w/ networking protocols, data communication interface, OOP & GUID B.S. Computer Science, Engineering or equiv + 1 yr software devlop or programming exp. Application Server Technology & Enterprise Java Beans exp reqd. \$74,078/yr. 40 hr/wk. Send resume to: Bravepoint, 5875 Peachtree Industrial Blvd #200, Norcross, GA 30092.

**BANKING/TECHNICAL CONSULTANTS:** Conrill Services, Inc. of Los Angeles, CA, an international IT Consulting company, has entry level and experienced openings for the following positions:  
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**\*United Software Associates, Inc.** is hiring all levels of Computer Programmers and Software Engineers. Please send resumes to 231 Old Bernal Avenue, Suite 8, Pleasanton, CA 94566. Tel: (925) 499-0230, Fax (925) 800-8708 or e-mail to: ashai@usain.com.\*

**Software Engineer: No Exp. Req'd.** Program w/PICK Basic, HTML & Java. Enterprise Resrc Pkng software pkge. Req: BS Comp. Sci/Engng or Elect. Engng. 40 hr.wk. Job/Intvw site: Laguna Hills, CA. Send this ad & resume to Promark Enterprises, Inc. DBA. Abbasoft Technologies, 2316 Mill Creek Dr., Ste#360, Laguna Hills, CA 92653.

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**Prerequisites:** Masters degree (or equiv.) in elect. eng tech/related field, + 10 yrs of exp in system anal. develop & soft. eng using OOA/OOD techs, UML or like language; know. of OO program. lang. like Java/C++ on Unix & NT, and MQSeries.

**Work Schedule:** 40+ hours per week 8:30 a.m. to 5:00 p.m./M-F  
**Job Location:** Tampa, Florida  
**Respond to:** CommerceQuest, Inc. ATTN: Tom Byrne, 2202 N. Westshore Blvd., Suite 600, Tampa, FL 33607.

**PROGRAMMER/ANALYST** to analyze, design, develop, code and support application software in a client/server environment using object oriented analysis, C, C++, COBOL, Visual Basic, MS-SQL, Oracle, ASP, Visual Studio, DB2 and MVS on Windows 95/98/NT and NOVELL platforms; Evaluate user requirements and develop Graphical User Interfaces; Develop and execute test scripts using e-Test, ODBC Tester and Visual Test. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field, with two years of experience in the job offered. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Send resume to: Satish Kumar Ashok, VP, CSR Data Systems, Inc., 21 Crestwood Street, Piscataway, NJ 08854; Attn: Job ID:

**SYSTEMS ANALYSTS LEAD SYSTEMS ANALYSTS** The College of American Pathologists is the leader in providing quality improvement tools for medical laboratories.

We are seeking systems analysts to design, code and test application systems. We require 3+ years programming and analysis (5+ years for lead analysts), general knowledge of structured design, and strong analytical skills. Experience in relational databases and SQL, and at least one of the following preferred: Java, Javascript, PERL, HTML, XML, Powerbuilder, Cobol, Oracle.

We offer an excellent compensation & benefits program. Send resume and salary history to: Recruiter, Dept. IS, College of American Pathologists, 325 Waukegan Rd., Northfield, IL 60093 or fax to (847)832-8172; eoe m/f/d/v

**Client Server Database Developer.** Responsible for designing, developing, coding, testing, documenting and maintaining client server databases and database queries. Develop functional architectural specifications. Develop sophisticated database systems. Applicant must have a Bachelor's Degree in Computer Science. Must have one year of experience doing full-time database development. Must also have one year of experience developing multi-tier client/server database applications and experience with database development methodologies. Must have some experience training software users. Experience requirements can be obtained concurrently \$55,000-\$65,000/yr., 40 hr. wk. Must have proof of legal authority to work in the United States. **Send your resume to Iowa Workforce Center, 2213 Grand Ave., Muscatine, IA 52761-5650. Please refer to Job Order IA1101198. Employer paid advertisement.**

**DATABASE ADMINISTRATOR** to administer, develop, analyze, test, implement, and maintain SQLDS databases and SQLDS development tools using OMF, VSAM, CICS and CDP-AS/4E. Administration duties include installation of SQLDS database and development tools, backup and recovery, creation and monitoring of user tables, indexes, constraints, views, synonyms, role, privileges, tuning of databases and SQL statements, memory and I/O. Develop utilities to support database administration activities. Require: B.S. degree in Computer Science, an Engineering discipline, or closely related field with five years of experience in the job offered or as a Programmer/Analyst. Salary: \$72,000 per year, 8:00 am to 5:00 pm, M-F. Send resume to: Mike Nixon, VP Dir of Info. Syst., Winn-Dixie Stores, Inc., 5050 Edgewood Ct., Jacksonville, FL 32254 Attn: Job SF

**Programmer/Analyst Level 1:** Design, program & implement custom telecommunications software applications. Combine good analytical skills with solid programming techniques to create solutions meeting design specs & customer requirements. Understand principles of database design & access. Demonstrate ability to plan, schedule & time manage programming efforts to satisfy customer requests within targeted deadline. Participate in assessment & design of new enhancements to system. Bachelor's Degree or equivalent education/training in Computer Science or related field required. 40 Hrs/wk, \$34,953/yr. Must have proof of legal authority to work in the United States. Send your resume to the Iowa Workforce Center, 800 7th St. SE, PO Box 729, Cedar Rapids, IA 52406-0729. Please refer to Job Order IA1101194. Employer paid advertisement.

## CHIEF TECHNOLOGIST

Lead the design, development and implementation of the critical component infrastructure of enterprise-wide computer information systems; evaluate complex business problems and coordinate efforts to create technology solutions; design complex system integration and business continuity solutions and provide technical guidance and quality assurance; participate in developing sales strategy; participate in the development of systems/technical architecture; provide technical project management.

Bachelor's degree in Computer Science or Economics required. Four years experience in the position or four years as Consultant &/or Technical Architect &/or Technology Manager or any combination thereof required. Experience in related occupation must include design and development of critical component infrastructure of computer information systems and technical project management.

40 hrs/wk; 8:00 a.m.-5:00 p.m.; \$125,000/year. Must have proof of legal authority to work permanently in the U.S.

Send 2 copies of both resume and cover letter to: **Illinois Department of Employment Security, 401 South State Street-7North, Chicago, Illinois 60605. Attention: Leila Jackson, Reference # V-IL-23798. NO CALLS. AN EMPLOYER PAID AD.**

Consultant  
full time/40 hrs per week (8:30 am - 5:30 pm)  
\$100,000 annual  
Chicago metropolitan area

Provide consulting services to client bank at client offices regarding installation, maintenance, evaluation of data communications hardware and software. Specific duties include: setup of Lotus cc: Mail post offices, routers, mobile user services under DOS, Windows, OS/2 NT, Novell, and provide ongoing training to client employees regarding use of electronic mail and computer network services. Recommend future enhancements for electronic mail infrastructure. Perform day to day maintenance, support for electronic mail system serving approximately 15,000 users. Supervise staff of five electronic mail technical support personnel. Requirements: minimum 4 year university degree (B.S. or its equivalent) in computer science, 3 years experience as Data Communications Analyst including experience in computer network or electronic mail administration using Lotus cc: Mail and Novell.

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- 6) Oracle Financial - AR, AP, GL, FA, PM
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- 8) Oracle Apps DBA
- 9) DB2, CICS, COBOL
- 10) AS/400, RPL/400
- 11) VB, SQL Server, Power Builder
- 12) SAP Functional/Technical, ABAP/4, FI/CO, SD/MM, MM/PP, and HR
- 13) BaaN: BaaN 4GL, Syst Admin., SQL, EDI, BOI, Aurum  
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BY PATRICK THIBODEAU  
WASHINGTON

**C**ONCERN IS growing in Congress that tough European data protection laws are on the verge of becoming the world's de facto privacy standard, with potentially costly implications for U.S. businesses.

In Congress last week, Rep. Clifford Stearns (R-Fla.), the chairman of the subcommittee on Commerce, Trade and Consumer Protection, warned that the European Union Privacy Directive will have a "potentially regressive impact on international commerce" and urged the Bush administration

to make an "expedited" review of the impact of Europe's privacy rules.

The EU Privacy Directive, which requires companies to follow a strict set of privacy rules, is becoming a worldwide regulatory model. Since it was adopted in 1995, other countries that have adopted or are working on similar rules include Argentina, Australia, Canada, Switzerland and New Zealand.

But there is a business cost to complying with these rules, said Jeff Maynard, founder and chairman of Netstore PLC, a U.K.-based application service provider that must follow the EU directive. He estimated that it will cost more than

\$100,000 to develop a process that lets people access their data, which is a directive requirement.

And despite Europe's efforts to harmonize privacy laws through the directive, Maynard, who also heads the European branch of the ASP Industry Consortium, said a study that his group released last week found wide divergence among international regulations. If that isn't corrected, "it will cost us money. It will slow things down," he said.

## Privacy Defense

But at last week's subcommittee hearing, many defended the EU regulations.

"Data protection must be considered a fundamental human right," said Stefano Rodota, chairman of the EU committee that developed the

## Not Safe

### THE OFFER:

The U.S. and the European Union agreed to a safe harbor that would exempt companies from Europe's privacy rules provided they follow voluntary rules. But only two dozen companies have signed up so far.

### THE THREAT:

In July, EU countries may begin enforcing data protection rules and threaten the export of data from Europe.

data protection standard.

Rep. Edward J. Markey (D-Mass.) said that in surveys, Americans overwhelmingly favor strong privacy rules similar to Europe's.

"I think the reason is that

most of our grandparents came from your countries," he said. Markey accused the Republicans and "a large corporate sector" of blocking privacy measures.

Rep. Steve Buyer (R-Ind.), however, said U.S. traditions call for less government intrusion and added that the EU's privacy rules illustrate the "good judgment by my ancestors to leave the continent."

Jonathan Winer, an attorney at Altson and Bird LLP in Washington, said the directive "threatens national sovereignty" with the possibility of shutting down data flows between nations. "The European Union is insisting that [the privacy directive] be treated as the de facto global standard," said Winer.

But the issue for the U.S. is whether it can buck international trends on privacy.

"For U.S. citizens, I think the directive highlights that American citizens are becoming second class in the privacy world at the global level," said Joel Reidenberg, a law professor at Fordham University in New York. ■

Continued from page 1

## UCITA

ist for the Texas Business Law Foundation. The foundation pushed for the recent introduction of UCITA in the Texas House of Representatives and Senate. "Long before the bill was filed, members in both houses had already received a barrage of e-mails and letters expressing opposition," Perkins said.

Because of the opposition, passage of UCITA is seen as unlikely in Texas this year. And if the measure isn't approved by the time the Texas Legislature adjourns in May, it won't be taken up again until the state's lawmakers — who meet only every two years — return for their next session in January 2003.

"We're certainly going to press the bill to try to get it through," said Celeste May, general counsel to state Sen.

John Corona, a Republican who is sponsoring the bill. "But because of the amount of opposition out there, we're not really hopeful that this will happen."

A number of large companies, including The Boeing Co. in Seattle and Phillips Petroleum Co. in Bartlesville, Okla., are leading the attack against UCITA in Texas and other states that are considering the proposed law. They're up against vendors such as Compaq Computer Corp. and Microsoft Corp. and technology industry trade groups that back the measure.

Among the reasons Phillips opposes the proposal, which was written by the Chicago-based National Conference of Commissioners on Uniform State Laws (NCCUSL), are provisions that could allow vendors to remotely shut off software at user sites in the event of contract disputes, said Ken Rigsbee, director of government relations at the \$21.2

billion petroleum refiner and distributor.

Nationwide Insurance Cos. in Columbus, Ohio, recently estimated that UCITA could up its internal costs by a minimum of \$20 million annually due in part to security problems associated with the "self-help" remote disabling provision, as it's referred to in the measure. The insurer also cited the likelihood of increased contracting and negotiation costs if UCITA is widely adopted.

Giving vendors the right to unilaterally shut off software in the midst of a dispute "is an absolutely unacceptable situation," Rigsbee said. Phillips hasn't prepared a UCITA cost estimate similar to the one done at Nationwide, "but we know it's bad," he said.

The NCCUSL, which attempts to establish uniform state laws, drafted and approved UCITA two years ago. The proposed law has been sent to all 50 states for adoption. UCITA proponents are

pushing for adoption in another four or five states this year in an attempt to give the law some momentum.

UCITA has garnered opposition from a broad range of groups, including libraries and consumer organizations as well as numerous state attorneys general. It has little chance of "passing around the country unless some of these groups start dropping their opposition," Perkins said. "And the only way that's going to happen is if we can work out some compromises with them."

UCITA would give more teeth to software licenses and set a series of default rules that would apply to the contracts between users and vendors. Opponents say those default rules would put users at a disadvantage, while supporters contend that companies would still be free to contract with software vendors as they see fit.

Irene Kosturakis, senior intellectual property counsel at Compaq, said the concerns

about UCITA are overstated and asserted that the measure would add more safeguards in areas where vendors already have rights under existing laws, including remote software disabling.

"Compaq believes that it is better to have a consistent set of rules ... and that's what UCITA provides," Kosturakis said. But compromises will likely be needed to win widespread approval of the licensing law, she acknowledged, adding that Compaq executives "are willing to do that" if necessary.

UCITA has also been introduced in the Maine and Arizona legislatures and is expected to be taken up soon in Florida. Opponents plan to attack in every state. "We're not taking any state for granted. Having UCITA passed in any state is not acceptable," said Matt McGarty, a spokesman for Americans for Fair Electronic Commerce Transactions in Sacramento, Calif. ■



FRANK HAYES/FRANKLY SPEAKING

## A Fine DNS.mess

**W**HEN I FIRST WENT TO START-UP New.net Inc.'s Web site last week, my browser almost immediately got an error message: "The host name test.client.new.inc could not be resolved." Of course it couldn't. The .inc top-level domain (TLD) is one that New.net just made up — along with .chat, .gmbh, .ltd, .sport, .club, .hola, .med, .tech, .family, .mp3, .travel, .free, .kids, .shop, .video, .game, .law, .soc and .xxx, all of which New.net will be using to sell domain names for \$25 each per year.

Do we really need 20 just-made-up TLDs? Naaah. Certainly not in corporate IT shops.

We use .com domain names — or, in a few cases, .org. Sure, the Internet Corporation for Assigned Names and Numbers (ICANN) recently approved a new batch of official domain name suffixes, but they're all a bunch of Pygmies. On the Internet, .com and .org are giants. For us, those are the only TLDs worth having.

And New.net's 20 TLDs aren't even part of that official batch of newbies (see related story, Page One). The company isn't waiting for sleepy bureaucrats at ICANN. New.net cut a deal with a few Internet service providers to recognize its TLDs, and even though they don't work for 90% of U.S. Internet users, it's full steam ahead selling .hola and .xxx.

Maybe this sounds silly. Maybe it is. But that doesn't mean we won't have to deal with these 20 new TLDs. As soon as New.net sells somebody else "sears.kids" or "kaiser.med," we'll be back to the same legal fights over whether our trademarks are being misused.

Of course, we could just buy our way out of the problem by throwing away \$500 a year to lock up 20 domain names we'll never use. That's cheap insurance — cheaper than any legal action would be, right?

Except there are plenty more TLDs where those 20 came from. See, all New.net's domain names are actually handled by New.net's own domain name servers. That means new domain extensions can be launched just about as fast as people can dream them up.

Wait, it gets better. Some of those New.net TLDs — including .chat, .shop and .mp3 — are also being peddled by another freelance TLD outfit, Domain Island. And this being the Internet, where imitation is the sincerest form of a

business plan, we can expect plenty more self-appointed TLD-makers selling the same domain names from the same endless well.

Sounding less silly by the minute, isn't it? Especially when this messy "fix" for a nonproblem comes while we have real domain name problems that need fixing.

Almost 20 years ago, the domain name system was an elegant fix for an ugly mess. (Anyone who remembers getting an e-mail message with an address that looked like!this knows just how ugly.) Domain names make the Web practical and e-mail easy.

But today, there are real issues with the domain name system. Instead of 1,000 hosts, it now serves millions. It's distributed so that there's no single point of failure that can shut it down.

But that means there are tens of thousands of potential points of failure — almost all managed by people whose real business is something else.

In late January, we learned that almost 40% of those pressure points had bugs that could be used to hijack Web sites and steal e-mail.

Even with those bugs fixed, there are other security and reliability problems with the current domain name system. They're hard, but they're

problems that matter more every day.

Attention start-ups: Forget junk and .bunk. Give us solutions to the real domain name problems. And then, if you want to peddle a few TLDs on the side, we'll be ready to listen. ▀

Hayes, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at [frank\\_hayes@computerworld.com](mailto:frank_hayes@computerworld.com).

Give us real domain name solutions — not junk and .bunk.



## SHARK TANK

**AFTER INSTALLING** a new app, IT pilot fish tells user to hit the F1 key for help if she has a problem. Half an hour later, disgruntled user calls: "I've been hitting the F1 key for at least 15 minutes, and no one has called or come down to help yet!"

**THIS APPLICATION** runs on a Unix server and displays on Sun workstations and Windows PCs. So when user calls with a problem, tech support pilot fish first asks, "Are you using a Sun computer?" Answers user: "No, it's over in the corner, in the shade."

**I AM NOT A CROOK** "I was just trying find a calendar in Word," says panicky user, "and then Word kicked me out and shut down — and a box popped up on the screen that said I had done something illegal!"

**WALKING USER** through a problem, IT pilot fish directs, "Now type a single quote." A single quote, repeats user. "Is that an uppercase comma?"

**DSL AT REMOTE SITE** is down, so pilot fish sets up a temporary dial-up connection and tells on-site staff that DSL service provider tech will call to fix the problem. Hearing nothing for

a few days, fish calls remote staffer to see if she's heard from the tech. "Oh, yes," she says. "He called and asked if my Internet was working. I told him yes, and he said, 'Thank you,' and hung up."

**RECEPTIONIST** complains that for every key she hits, three or four letters show up on her monitor. As pilot fish is removing the keyboard, brown liquid pours out the side. "Oh, I spilled my coffee all over it this morning," user says. "Do you think that had anything to do with the problem?"

**MAKE IT A DOUBLE** Secretary tells help desk, "I just spilled coffee on my boss's keyboard. What should I do?" Help desk pilot fish decides, "What the heck, it's just a \$35 keyboard. Have her disconnect it and wash it out in the sink. If that doesn't work, we'll replace it." Next call is from her enraged boss: "Who the hell told my secretary to put my new \$4,000 laptop in the sink and run water all over it?"

Now help me out: **sharky@computerworld.com**. You get a snazzy Shark shirt if your true tale of IT life sees print — or if it shows up in the daily feed at [computerworld.com/sharky](http://computerworld.com/sharky).

## The 5th Wave



"Philip—come quick! David just used Gladwave to connect the amp and speakers to his air-guitar!"

E-mail: richman@the5thwave.com





TECHNOLOGY AND THE BOTTOM LINE

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COMPUTERWORLD

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# SPEED... DARING... METRICS?

Racing along in the fast lane of e-business, few are willing to talk about what's really important: Measuring value. p. 18



A SUPPLEMENT TO COMPUTERWORLD

*One day you wake up and realize that your e-commerce site is, well, all your commerce.*

*Have you heard of Kintana?*

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Ninety percent of Cisco orders are processed through a critical e-commerce application called Cisco Connection Online. It brings together over 400 content developers, 700,000 data files, and 175 applications to generate \$55 million in revenue every day. Needless to say, as CCO goes, so goes Cisco.

Cisco asked Kintana for help in technology chain automation for this e-commerce side of their business. By providing secure, systemized processes with increased visibility, self-service reviews and approvals, and automated deployment of new site functionality, we have delivered in spades. Revenues through CCO have quadrupled from \$4 billion to \$17 billion a year, while the team required to manage the site has decreased by 25%.

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LETTER FROM THE EDITOR

## A Whole New Kind of ROI

*A magazine for senior execs who see technology in business terms*

**T**HESE ARE THE DAYS OF THE BOTTOM LINE. It matters to everyone, from dot-commers to corporate climbers. It matters to your CEO, of course. But it's also crucial to your senior executive colleagues, whether they hail from finance, operations, sales, marketing or information technology.

These are also the days of technology's greatest impact on the bottom line. Savvy, strategic use of IT is proving itself to be the single biggest differentiator for a thriving business in a world being reshaped by the Internet economy.

"Few of the Fortune 500 retailers and manufacturers steeped in the thrill of the Internet are willing to talk about measuring the real value of their e-business ventures," writes Kathleen Melymuka in our cover story about ROI metrics for Web projects. Yet she found executives from Raytheon Corp., Deere & Co. and Martha Stewart Living who were willing to talk in detail about how they actually measure e-business value. Those are the kinds of stories we'll bring you, every other month, in this new magazine.

*Computerworld ROI* is written for you: the senior executive who sees the value of IT but thinks about it in business terms. The name *Computerworld ROI* is meant to convey that intersection of technology and business where so many executives live today. In

researching the idea for this new magazine, we talked with dozens of corporate managers and were struck by how deeply the topic of technology payback resonated. "Return on investment and the entire IT value proposition is a constant challenge for us," one confided.

Of course, you can also spin the ROI acronym — that venerable business shorthand for profit — to stand for "return on information" or even "return on innovation." But the real point of a broader vision of ROI is that the bottom line ultimately means more than just a balance sheet. The measure of technology's true return is a slippery metric. No one seems to have found a one-size-fits-all method for measuring ROI.

Consider, for example, the balanced-scorecard approach used by Raytheon to measure its e-business effectiveness.

The \$20 billion defense and electronics giant tracks everything from customer loyalty and transactional excellence to financial performance and infrastructure reliability. As Eric Singleton, Raytheon's director of global e-business, told us, "The purpose is to manage the business, drive decisions on whether to keep the business, add resources in areas where there's a gap and figure out how to capture successes and apply them to other e-businesses."

That's bottom-line business thinking about technology. That's a whole new kind of ROI.

— Maryfran Johnson



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## risk & reward

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Everyone is rolling out, updating, enhancing or otherwise spending gobs of dough on Web projects. But does anyone have a sound methodology for determining the value of these Internet investments? Some do; some don't. Here's a look at high-profile companies that are actively pursuing Web opportunities — but not without first conducting a careful bottom-line evaluation.

BY KATHLEEN MELYMUKA

### 24 New Top Dogs of High Tech?

As companies increasingly leverage the Internet for commerce, IT management has been pushed into the forefront of business decisions. That has inspired CEOs to look outside the IT ranks for leadership of their firms' technology assets. What these new low-tech CIOs are learning is that they must lean on others for technical savvy while their companies are leaning on them to bring business sense to technology issues. BY STEVE ULFELDER

### 30 Failing to Construct the Seller

According to the authors, if you're leading a sales force automation project, you're likely to (a) fail, (b) lose millions of your company's dollars in the process and (c) need a new job. So why even attempt it? Well, there's a significant upside if it succeeds. But you need to have a penchant for risk-taking — and low blood pressure. BY SEAN T. KELLY AND JOHN A. BARRY

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The more than 140 dot-coms that failed last year left behind some key ROI lessons. Lesson No. 1: Count cost savings and customer conversion expenses, not eyeballs and click-throughs.

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*Computerworld ROI* is at the intersection of technology and the bottom line, where so many executives live today, writes editor in chief Maryfran Johnson.

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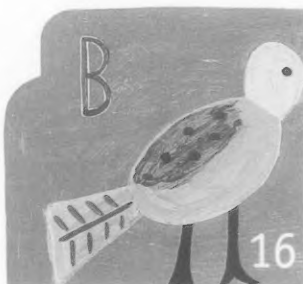
**10 Lose old metrics** One analyst thinks traditional business metrics don't work in the Internet world. Use "business velocity" as a measuring stick, he says.

**11 Offshore options** Sending software projects overseas makes sense from a quality perspective as well as a cost perspective.

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Executives often think of technology as a train that grabs business as it rolls along a track. This columnist says it's like a taxicab that goes where customers work and play.

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The B2B revolution hasn't even gotten under way, according to this writer. In fact, it's more than a business innovation or a technology change — it's an economic transformation.

### bottom line

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If your advisers are wringing their hands over B2B, writer Mark Hall offers this advice: Do what Louis XIV would do — fire them.

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#### 42 Take-Aways

Find out what's on tap for our May/June issue. See what content can be found only on the *Computerworld ROI* Web site. And read a final thought from our CEO.



### ROI ON THE WEB

Check out *ROI* on the Web at [www.computerworld.com/roi](http://www.computerworld.com/roi) for the truth about technology and the bottom line.

"The New Economy is for real," says **GRADY E. MEANS** ("The X Economy," page 16), "and it will completely transform business." Means monitors this transformation from Price-waterhouseCoopers, where he leads the strategy consulting group. He is co-author of two books, *MetaCapitalism* and *Wisdom of the CEO* (John Wiley & Sons, 2000).



As an adviser to top executives for nearly 20 years, **THORNTON A. MAY** ("Golden Rules," page 14) found resonance in the idea of a magazine devoted to technology ROI. "It's spot-on the issue of the new millennium. High-value IT is the DNA of the New Economy," he says. May is corporate futurist and chief awareness officer at Guardent, a security solutions provider, and an adjunct faculty member at the John Anderson Graduate School of Management at UCLA.



It's not bits and bolts that get **ROI** contributor **KATHLEEN MELYMUKA** pumped up. Her cover story, "Measuring your Online Profitability" (page 18), got to the heart of her writing passion: "My favorite stories are those pointing out that the emperor is buck naked. That's what I loved about this story: The idea that so many businesses are 'just doing it' without a clue about the return." A *Computerworld* reporter, Melymuka's next project involves figuring out what "knowledge management" really means.

What **ROI** contributor **LINDA A. ROSSETTI** sees in the e-business marketplace runs counter to the common perception. "Companies are starting to see the results of e-business," she says, "so they're accelerating their commitment." Rossetti's story, "The Big Bounce" (page 34), looks at four lessons that can be learned from the failures of dot-coms. She is founder and CEO of eMaven, an online strategy consulting firm in Boston, and is a frequent speaker on the topics of e-business models and ROI.

What's the key to a successful start-up? Stellar leadership, says **ROI** columnist **GUST TAI**. His five traits for great stewardship ("Leaders in the Rough," page 40) form the checklist for his own search for future market leaders. Tai is a general partner at Trinity Ventures, which invests in early-stage software and communications companies.



## ALSO IN THIS ISSUE

**JOHN A. BARRY** is editorial director at CoverOne in San Ramon, Calif., and is co-author of *Sunburst*, a best-selling history of Sun Microsystems. ■ **MITCH BETTS**, Washington bureau chief at *Computerworld*, has covered the role of technology in business, politics and society for more than 16 years. ■ **SEAN T. KELLY** has more than 10 years' experience writing about business and consumer technologies. He lives in the San Francisco Bay area. ■ **STEVE ULFELDER** is a writer in Southboro, Mass., and a frequent contributor to *Computerworld*, *Darwin* and *The Boston Globe*.

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TIPS, TACTICS AND TIMELY INFO ABOUT TECHNOLOGY PAYBACK



## exec priority Think Global, Act Global

**T**HERE'S NO DOUBT THAT PRESSURE TO "globalize" Web sites and information systems will come not only from customers, but also from the boardroom. More than three quarters of U.S. boards of directors are tackling global issues on a regular basis, according to an annual survey released by Korn/Ferry International.

In fact, globalization is included in regular overviews of corporate strategy, and board members say they need to improve their global representation.

"The message is quite clear," says Peter Crist, head of global board services at Korn/Ferry in New York. "Boards recognize that the global economy is a powerful influence on business decisions and bottom-line results and, consequently, are elevating it to a much higher priority."

This isn't just paying lip service, either. The 1,000 respondents said boards are adding one or more directors who bring hands-on overseas experience, recruiting more foreign nationals for board seats and ensuring that new directors have "a global mind-set."

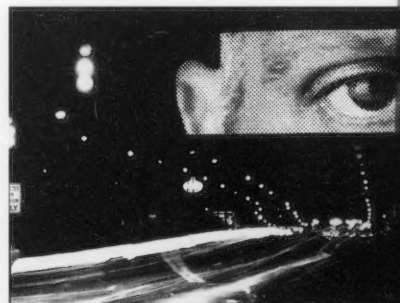
## eye on the prize Time to Ditch Rearview Mirror

**S**OMETHING'S WRONG HERE: We're racing to run our businesses on Internet time, but we measure performance by looking in the rearview mirror at last month's sales. This reliance on backward-looking metrics has got to stop, says Forrester Research Inc. in Cambridge, Mass.

It's just too reactionary, warns Forrester analyst Laurie M. Orlov, who claims that the wave of the future is "business velocity management." That means developing a customized scorecard that taps internal, external, operational and fiscal measures of business performance — the equivalent of the leading indicators used by economists to look ahead at the U.S. economy.

Exactly how do you do that? Collect data from all departments and outside partners using enterprise resource planning and analytic applications, says Forrester. Then, after modeling company processes and mining historical data for predictive benchmarks, feed real-time data into the model to monitor the company's business velocity. Whew!

Orlov says the payoff from this work is that forward-looking indicators give a CEO more time to address trends, change gears, seize a new business opportunity or tackle a looming crisis.





India's programmers race ahead in the software industry.

## offshore coders **Cheaper and Better**

**I**T'S TIME TO SHAKE THE NOTION THAT computer programming is a uniquely American skill. Some of the best software in the world is produced in India for export. "The offshore outsourcing market has evolved far beyond legacy systems maintenance and assorted low-end development work," says Cynthia Doyle, an analyst at IDC in Framingham, Mass. "Today, many offshore service firms have the skills and

expertise necessary to deliver high-end development work for Web-based and enterprise applications."

In other words, U.S. companies should seriously consider foreign programming firms when outsourcing technology projects. In fact, Doyle says, the mature software-exporting firms in India will provide strong competition to U.S.-based software consulting companies.

### talking head

"It's harder than you might think to **squander millions of dollars**, but a flawed software development process is a tool well-suited to the job."

—ALAN COOPER, *The Inmates Are Running the Asylum*

PHOTOGRAPH: DAVID WELLS/MATRIX

## the list **10** **Online Blunders**

- 1** Requiring a password to access customer service.
- 2** Making the customer service section hard to find.
- 3** Not offering search engines for general customer queries.
- 4** Having no site map.
- 5** Not internationalizing your site.
- 6** Not responding to customer messages.
- 7** Allowing customer channels to be out of service because systems are down.
- 8** Employing unfriendly phone agents.
- 9** Not integrating between click and brick (Web and traditional stores).
- 10** Requiring customers to download software to get service.

Source: Gartner Group Inc., Stamford, Conn.

zero cost savings

**Question:** How have your online purchasing activities affected the **total cost** of ownership of your product or services?



Base: 368 companies  
Source: National Association of Purchasing Managers/Forrester Research Inc., January 2001

pop goes the market

## B2B: From Billions to Trillions

Projected business-to-business e-commerce revenue by industry:

	2000	2005
Computer/telecom equipment	\$90 B	\$1T
Food/beverage	\$35 B	\$863 B
Automotive	\$21 B	\$660 B
Industrial equipment/supplies	\$20 B	\$556 B
Construction/real estate	\$19 B	\$528 B

Source: Jupiter Research, New York



## business pioneers E-Procurement: OK to Be No. 2

**A**NALYSTS AT GARTNER GROUP INC. IN Stamford, Conn., are noticing a curious phenomenon: Even companies that are usually IT followers are racing to be the first to implement e-procurement systems. But then the pioneering projects get bogged down in technical and political issues. What's wrong here?

The problem is that "there is no first-mover advantage in e-procurement," as the title of a Gartner bulletin puts it. Being a pioneer in this market is a huge hassle. The projects grow out of control, the software vendors are immature, the e-procurement software itself is immature, and very few consultants have much experience with it. Plus, "early adopters of e-procurement are likely to have to educate many of their suppliers," the bulletin says.

Worst of all, early e-procurement implementers face high prices for software and transaction fees, while "later entrants can expect to have many more attractive offers available." The bottom line: "Those who expect a rapid return on investment are in for a big disappointment," Gartner reports. So scale down those expectations of "miraculous transformation" and start with a modest project focused on improving the process of ordering white-collar supplies.

TOP LINE COMPILED  
BY MITCH BETTS

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BY THORNTON A. MAY

## Annual IT Budget? Kill It

*CIOs need Net-style flexibility for enterprise projects*

**A**NY OBSERVER OF THE CONTEMPORARY DEBUT DE siècle scene would no doubt agree that technology is ground zero in the New Economy. CIOs and CTOs have become celebrities of the emergent digitally aware society. The lifeblood of our good times, of course, is money. And the IT spigot is wide open.

Corporate futurist types like me predict that by the year 2004, the average Fortune 500 firm will have to spend 20% to 40% of its operating budget on IT just to stay competitive. Sound crazy? Just ask Merrill Lynch, Charles Schwab and Vanguard Financial what percentage of their budgets are spent on IT today.

I strongly believe that IT done right creates shareholder value. But I have to step back from the technology tribe and

observe that we are in danger of believing our own PR. Financially, and in many cases operationally, IT is still a mess. In the words of one financial controller: "I don't care what the CEO says; you guys still suck."

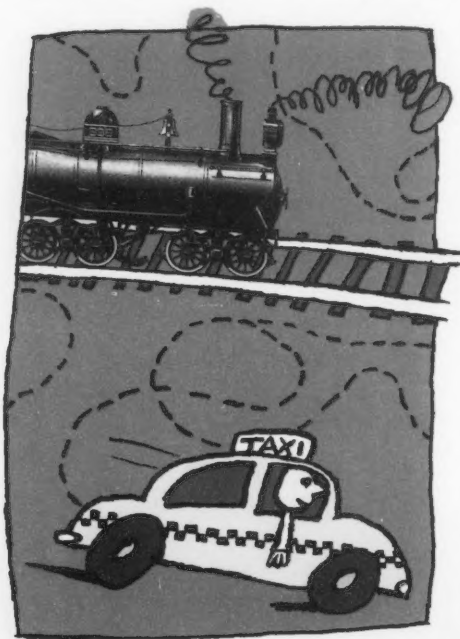
Charlie Feld, the former CIO at Delta Air Lines, maintains that IT doesn't have a skill set shortage but is suffering from a poorly managed, poorly structured delivery engine. He and other longtime CIOs contend that the days of large IT shops are numbered. Such organizations are too big, too slow, too expensive and add too little value.

I am fortunate to have instructed executive audiences at a number of prestigious universities in the U.S. and abroad, and to each impressive collection of senior executives, I always pose this question: "Have you been trained in how to make good IT investment decisions?" In 17 years of teaching, no one has ever answered yes. Not only are executives unschooled in making these decisions, but they also fail to learn from the bad IT investments of the past.

How do we change this? First, kill off annual budgeting cycles. In this fast-changing sector, rigid adherence to such cycles borders on malfeasance. Bob Kaplan, a CPA and Harvard Business School professor, says annual budget cycles measure the wrong things. Jeff Williams, a professor at Carnegie Mellon University and author of *Renewable Advantage: Crafting Strategies in Economic Time*, says the biggest piece of "wrongness" is the time frame used to measure the enterprise. Business isn't an annual game, so budget cycles should be replaced by project cycles driven by opportunity.

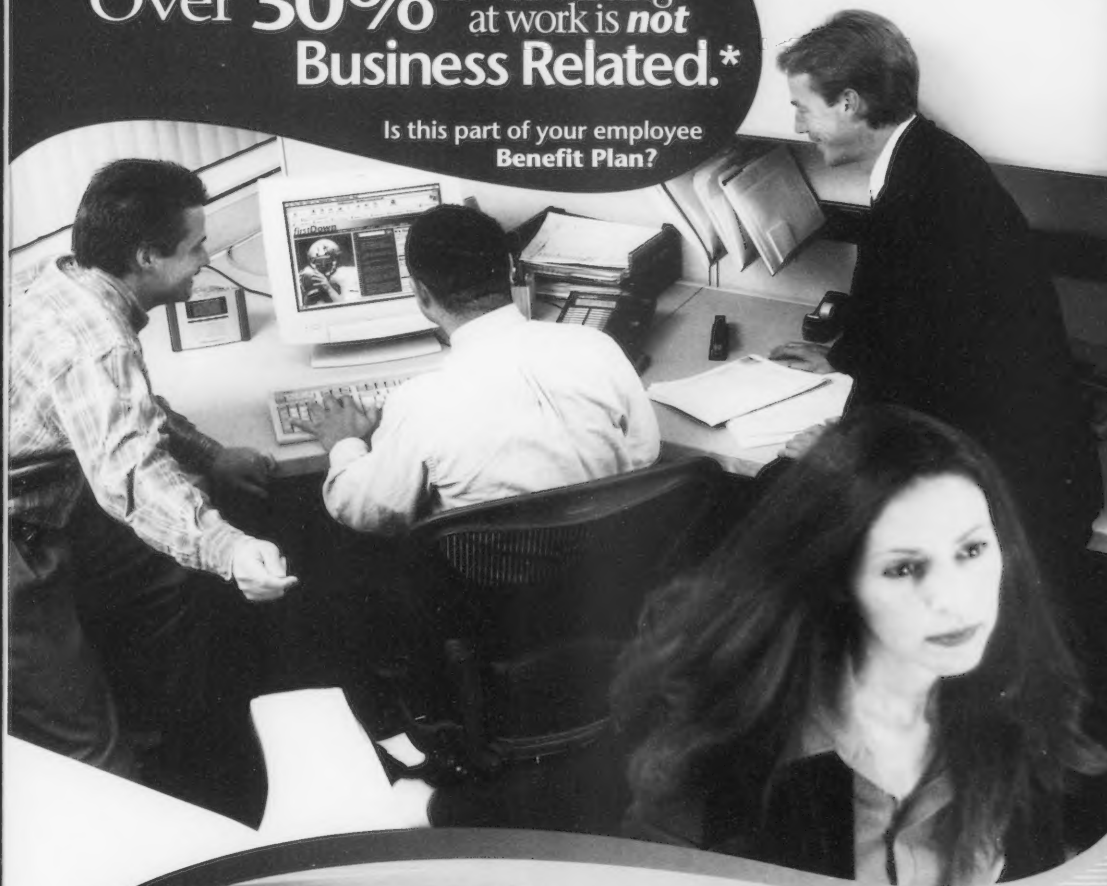
Think of it in terms of railroads and taxicabs: Railroads were designed with rigid rules, predetermined tracks and no real flexibility. Taxicabs plan far less. They cruise the city, seemingly at random but in fact concentrating their efforts in areas where customers are more likely to need them.

CIOs are facing organizations that want taxicablike customizability but are saddled with financial systems marred by train-track inflexibility. Why anchor future spending on past spending? Let's change this to a system more akin to bond trading, where CIOs enter and exit opportunities (or projects) as the environment changes. Perhaps then that celebrity status will be truly deserved. **ROI**



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BY GRADY E. MEANS

## Rebirth of the New Economy

*You won't achieve value payoff until you transform your business model*

**T**HE NEW ECONOMY ISN'T ABOUT TECHNOLOGY — it's about transformation. Despite the most recent downturn in the financial performance of many high-tech firms, we remain in the midst of an economic revolution of epic proportions, comparable to the transition from hunting to farming or from farming to the industrial organization. And what's more, this is just the beginning.

This revolution is being driven by online business-to-business concepts and network exchanges. These marketplaces and trade exchanges offer enormous capital leverage and opportunities of scale, creating value in every sector.

In the 19th century, the Industrial Revolution ushered in new technology, but it primarily enabled companies to exercise massive economies of scale. Throughout the 1990s, enterprisewide technology allowed companies to develop common business models to reduce costs, but more important, to respond to changing business conditions with great speed and flexibility. In most cases, productivity increased, and growth followed.

Now we're in the era of online business-to-business, in

which trade exchanges, for example, allow for the enormous leveraging of capital, driving companies to scale up capacity with relatively small investments and to acquire customers at far lower costs than ever before. The result is huge growth of market potential and value.

There is competition in every industrial sector worldwide to develop business models that most effectively lead the transformation to the New Economy. For the most part, these initiatives begin with the creation of industry-wide trade exchanges. Some have been successful. Many have failed. There are endless examples of good technology models, but unsuccessful transformational business models lead to value decline. On the other hand, there are a few excellent examples of companies that have started with a good business model, pieced together the appropriate technology and driven value.

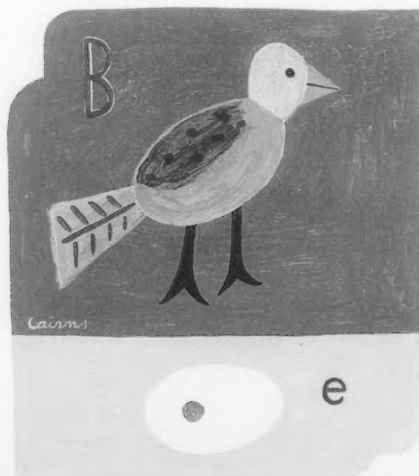
Thus far, economic breakthroughs have been about strong business models, excellent management discipline and appropriate application of technology to achieve value payoff from the New Economy.

But many firms have taken Old Economy business concepts and strategies into relatively limited New Economy trade exchanges. This doesn't work — and shouldn't be expected to. The successful companies in this new era are those that have dramatically transformed their own business model and, in turn, designed trade exchanges to give them maximum capital leverage and flexibility in the marketplace.

This column is called "The X Economy" because it explores how New Economy concepts such as trade exchanges provide capital leverage and generate value. Future columns will examine the specifics of successful New Economy models, outline business strategies that will work in the New Economy and document failures of concept and implementation.

In the past year, I have seen three generations of trade exchange design and transformational approaches. The world is moving quickly, and during the next few years, some companies may approach trillion-dollar market capitalizations. There has never been a more exciting era in business history.

ROI





[ T O O T H L E S S ]

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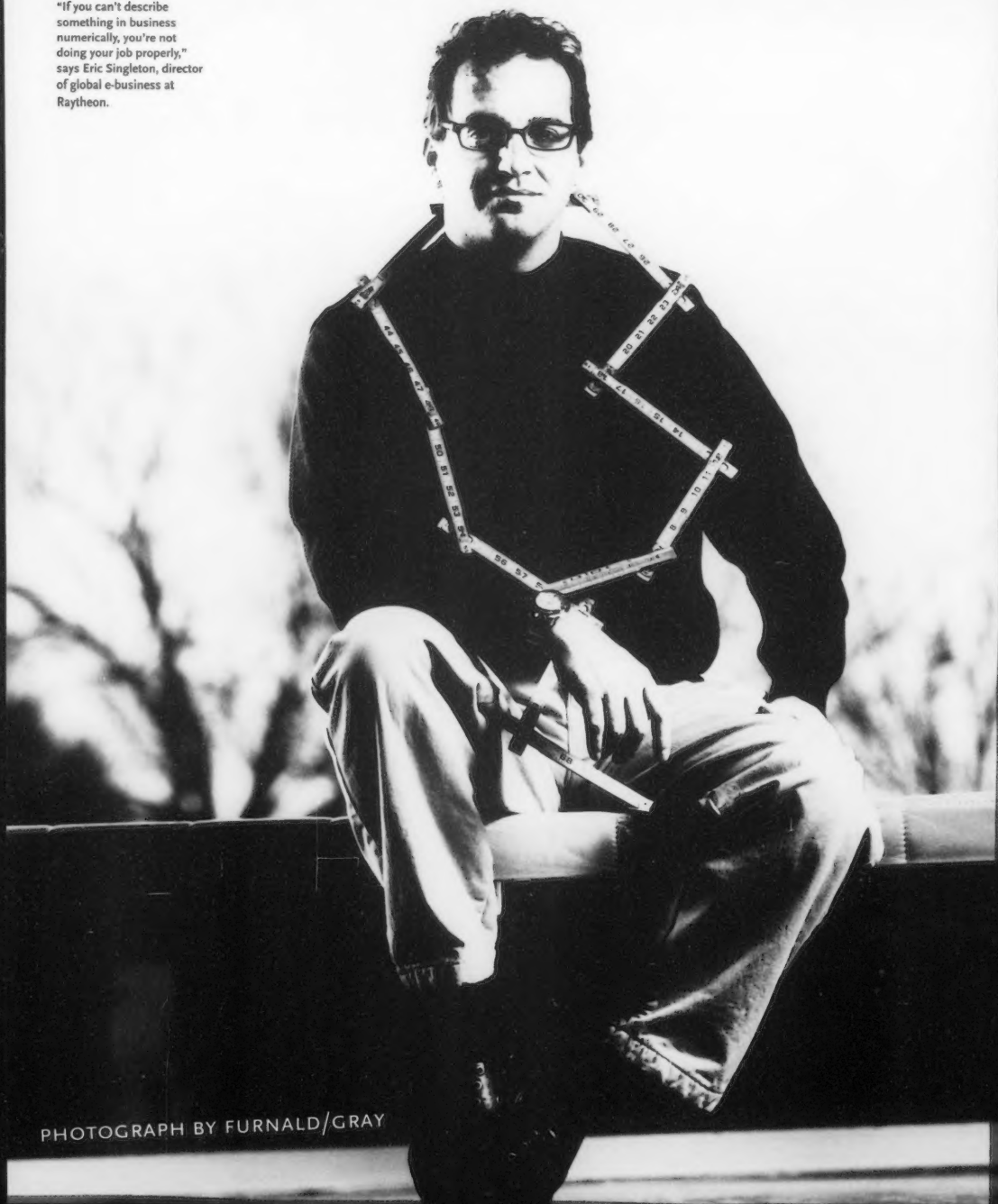


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"If you can't describe something in business numerically, you're not doing your job properly," says Eric Singleton, director of global e-business at Raytheon.



PHOTOGRAPH BY FURNALD/GRAY

# MEASURING YOUR ONLINE PROFITABILITY

CIOs need reliable yardsticks to get bottom-line results online. Here are proven ways of estimating your ROI

What comes to mind when you hear the word *e-business*? Speed? Intuition? Daring? Seat-of-the-pants? ¶ How about metrics? Bottom line? ROI? Value? ¶ For all the attention that's been paid to the first set of words, you don't hear much about the second. In fact, few Fortune 500 retailers and manufacturers that are steeped in the thrill of the Internet are willing to talk about measuring the real value of their e-business ventures.

BY KATHLEEN HOLYHUKA

"Many companies seem to be just doing e-business and not measuring at all," says Jim Highsmith, director of the e-project management advisory service at Cutter Consortium in Arlington, Mass.

Deere & Co. estimated that a Web-based system could save the company tens of millions of dollars. Only then did it buy the software.

"We worry about people just throwing up their hands and saying, 'We can't measure this, and anyway, we just have to do it,'" says Tom Bugnitz, managing director of the E-Business Forum and president of The Beta Group, a St. Louis consulting firm.

But metrics are crucial. "If you can't describe something in business numerically, you're not doing your job properly," says Eric Singleton, director of global e-business at Raytheon Co. in Lexington, Mass. (see story, page 22). "How can you communicate success, failure or the gaps that need to be closed?"

Part of the problem may be that people feel overwhelmed by the abstractness — the "virtualness" — of e-business as well as by the breadth of applications, but it's not really that difficult if you think less about the *e* and more about the *business*, says Bugnitz. "People put e-business into one big block of stuff, and, really, there are a lot of different blocks," he says. "How you're going to measure depends on where you're doing this."

At Deere & Co. in Moline, Ill., for example, Jim Harl looked at a bunch of e-business metrics to establish the value of an e-business supply-chain project before Deere committed to it. "Everybody gets excited about doing e-business, but if you get caught up in it, you may put in some neat, great technology that doesn't touch

your bottom line," says Harl, Deere's manager of e-business for supply management. "Don't lose sight of the fact that it's a tool in the context of a larger business plan."

Deere spends \$1.5 billion annually

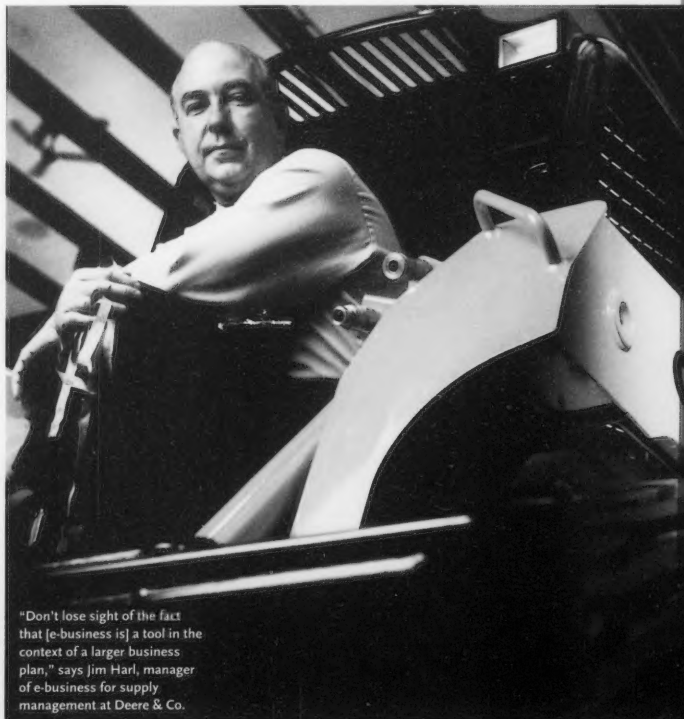
that expense, and he felt that the Internet might be the tool to drive those procurement costs down.

He started by measuring the existing indirect materials procurement process.

"We looked at everything you do — all the people, all the time on computers, putting [the purchase order] in an envelope — we mapped that out in excruciating detail," he says. Then he determined which steps would go away

with an Internet system and how that translated into driving down cycle time and costs.

The company estimated that a Web-



"Don't lose sight of the fact that [e-business is] a tool in the context of a larger business plan," says Jim Harl, manager of e-business for supply management at Deere & Co.



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## THE BALANCED E-SCORECARD

Measuring everything from customer loyalty to infrastructure

**E**RIC SINGLETON LEARNED THE METRICS MANTRA WHILE STEEPED IN THE METRICS-centric Six Sigma quality program at AlliedSignal Inc. Now, as director of global e-business at Raytheon Co., he's managing the performance of all the company's e-businesses using a balanced-scorecard approach. Here's what it measures:

- Innovation and flexibility: Average time from concept to start; speed to match a rival's site; speed at which the competition will match your site; time between relaunches.
- Customer loyalty: Percentage who return within a year; time between visits; duration of visit; conversion rate; percentage who give personal information.
- Transactional excellence: Unique visitors each month; online sales abandoned; percentage of orders correct; time to respond to a customer; percentage of orders filled on time.
- Customer information: Percentage of e-mail addresses collected out of all traffic.
- Infrastructure reliability: Time to load a page; network uptime and scalability.
- Supply-chain excellence: Inventory levels; inventory turns; order confirmation time; percentage of products built to order.



- Valuation and financial performance: Return on invested capital; market capitalization migration (the changing value of the overall business).
- Digital quotient: For complementary e-business channels, percentage of total revenue generated online.

At Raytheon, these metrics are reported up the line regularly to Singleton, who reports monthly to the chairman on the state of every e-business. "The purpose is to manage the business, drive decisions on whether to keep the business, add resources in areas where there's a gap and figure out how to capture successes and apply them to other e-businesses," he says.

"It works for Raytheon; I don't see why it can't work for everyone."

— Kathleen Melymuka

based system could save tens of millions of dollars. Only then did Deere purchase Ariba Buyer software, which it plans to implement with a select group of indirect material suppliers to execute that part of the supply chain more efficiently. "If it's done right, it should reduce the suppliers' costs, too," Harl says.

The preproject metrics proved to Harl that there was business value in the Internet tool he envisioned. "It's not e-commerce for its own sake," he says. "It's, How do I use these tools to bring greater value to our supply chain?"

As the project moves forward, Deere will see whether expected savings materialize, Harl says, "and if not, why not."

Sheila Beauchesne is using e-business metrics to fine-tune an existing e-commerce retail site. "No two ways about it: We are in the e-business world to make a profit," says the CIO at Martha Stewart Living Omnimedia Inc. in New York. "Profit drives the decisions we make."

And you can't see the profits without metrics, she says. "So many dot-com businesses have gone under because they're focused on the top line and not the bottom line," she explains. "You've got to have a plan for becoming profitable, and you've got to base it on metrics."

Beauchesne says e-business metrics are the same as traditional IT metrics in some ways. "The bottom line is still what matters," she says. That means not just getting customers to the site but also completing a transaction and getting the product to their doorsteps on time and cost effectively.

But e-business metrics have to track user behavior, not just results, and that's different from traditional IT metrics. "We have to look at where customers are coming from, what's driving them to hit the Buy button, which content is compelling them, why they abandon the

shopping transaction," she says. "User behavior is a lot more critical and difficult to track. So coming up with metrics is an evolving science."

The Martha Stewart site includes information on how to make decorative projects, and the content for each project is directly linked to a shopping area where users can buy the specific materials they need. Every link, from content to an e-commerce opportunity, is a unique, trackable item, Beauchesne explains.

Among the metrics the company is attempting to track are what drives traffic and sales, what converts users to buyers and what affects dollars per order. Meanwhile, on the cost end, Martha Stewart tracks Web production, imaging and operations expenses with a view toward developing efficient, repeatable processes at the lowest possible cost. "We're not perfect yet, but we're getting better at it," Beauchesne says.

She says these metrics are helping to hone the profitability and operational excellence of the site. "We've learned that you have to provide an individual experience," tailoring the site for both the novice and the Web-savvy shopper, she says. "We've also learned that you've got

after the fact," says Farhat, corporate e-business leader at the company's Fairfield, Conn., headquarters.

For example, online sales is a measure of what you've been doing. "Indicators are things along the way that point toward the outcome," Farhat says. Are you attracting users, interacting with users, transacting with users, retaining users, grow-

Farhat says measures must be simple, meaningful, quantifiable and auditable. For example, key measures for business-to-business projects in which GE is the buyer include the effort it takes to consummate a purchase and the number of suppliers that qualify to bid for the business, assuming that more suppliers bidding means lower costs for GE as a buyer.

When GE is the seller, it measures customer satisfaction by looking at whether customers are returning, designing their own Web pages to interact better with GE, asking for more applications and buying more from GE as they grow.

These basic metrics are essentially the same for any GE business, Farhat says, and e-business projects have to prove their value like all the rest. "They just compete for resources like any other project," he explains, "because if it's not going to empower the business strategically and tactically, they shouldn't be doing it." ROI

**The bottom line matters, but e-business metrics have to track user behavior, not just results, and that's different from traditional IT metrics.**

to have a really clean shopping experience. If anything confuses the user and causes him to not finish, you've lost that customer."

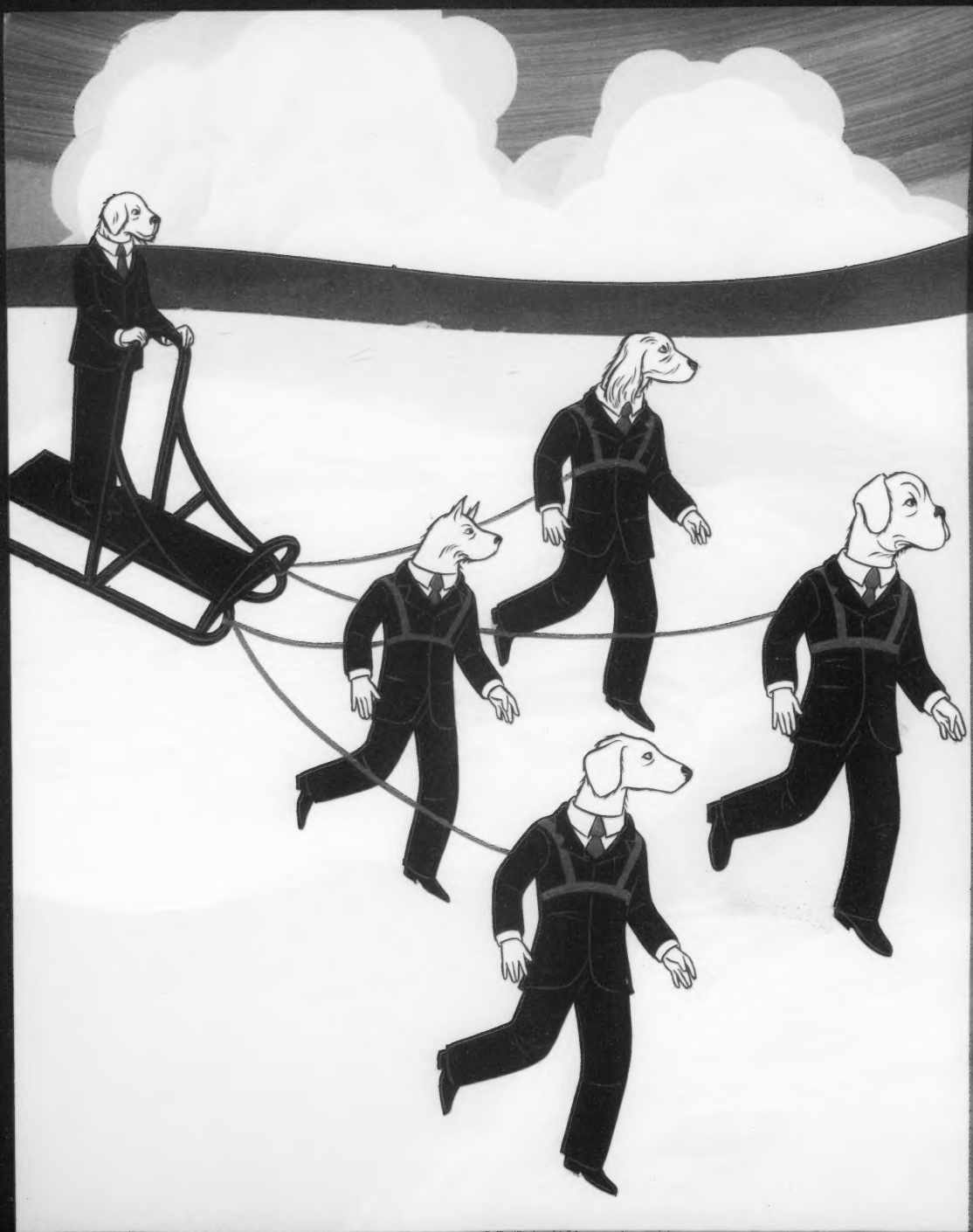
At General Electric Co., Camille Farhat makes a distinction between measures and indicators and says each is essential to success. "Measures are the consequences of things you do; you look at them

ing with users? Those answers indicate how you're doing.

The key to a good outcome is to continually keep your eye on the indicators and intervene when they don't look favorable, he says. For example, when customers log on but don't buy, follow up and find out why. "Then you can fix whatever is wrong with the experience," he says.



"No two ways about it: We are in the e-business world to make a profit," says Sheila Beauchesne, CIO at Martha Stewart Living Omnimedia.



As CIOs bite off more revenue responsibilities, CEOs are less interested in their technical chops BY STEVE ULFELDER

# NEW TOP DOGS OF HIGH TECH?

ASK KIRK KAPLAN WHAT SCARES HIM TO DEATH ABOUT BEING A NEWLY MINTED TECHNOLOGY chief, and he says, without hesitation, "Two letters: NT."

That particular phobia is hardly unique, but Kaplan's fear packs a little extra punch: Having spent 17 years as a copywriter and then creative director at Turkel Schwartz & Partners, Kaplan — spurred by a fascination with the Internet's possibilities — recently hauled off and volunteered to become the Miami advertising agency's head IT honcho. (Kaplan's title is chief knowledge officer, and he jokingly says he's mulling a title change to chief alchemist. But make no mistake: He functions as a CIO.)

ILLUSTRATIONS BY NICK DEWAR

Like many ad agencies, Turkel Schwartz was a Macintosh-or-die shop. But the writing's on the wall: Affiliates and business partners are demanding files that can at least coexist with Windows NT, and Kaplan needs to do something. Fast. "I got thrown in the rats' nest," he says.

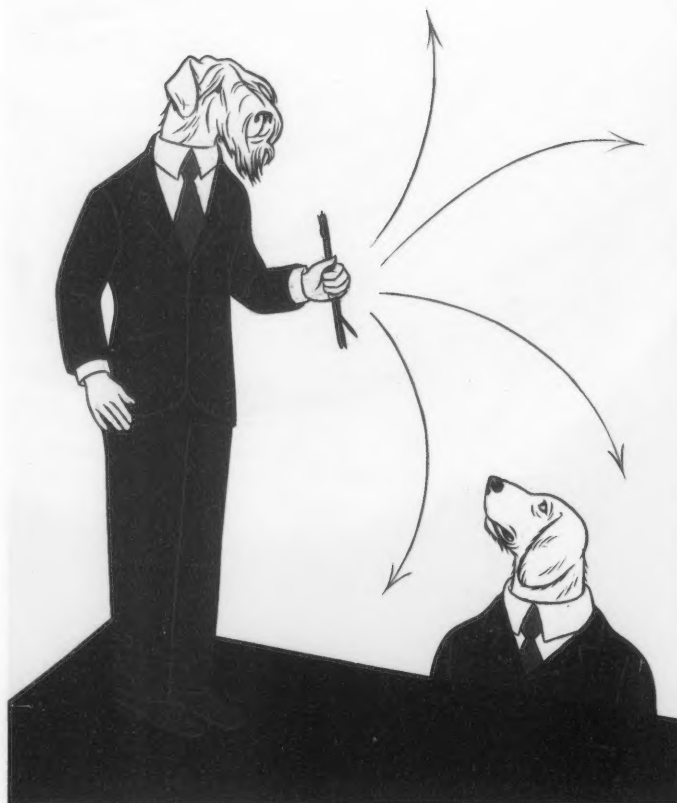
### THE NEW BREED

IS INFORMATION TOO VALUABLE TO trust to information technologists? As IT becomes more and more strategic, maybe an MBA is more useful than a computer science degree. Maybe time spent overseeing advertising layouts is better than time devoted to reviewing database schema. Increasingly, organizations are installing technology bosses who have made their mark on the business or marketing side. Although the overwhelming majority of CIOs still rise from the IT ranks, it's becoming increasingly clear that it now takes more than hardware and software chops to make a CIO.

While many experts applaud the trend toward a more well-rounded CIO who brings business credentials to the table, they also warn that those technology chops still count for a lot. Any vendor can waltz in the door and promise a magic solution to all the enterprise's problems. CIOs need the ability to apply the sniff test to these promises and make critical, expensive choices.

Or do they? Experts and CIOs agree that today, what's needed is a technology team made up of people who can cover one another's weaknesses and complement one another. It seems that CIOs who aren't former code jockeys can thrive if they have a tech-savvy lieutenant (or, more likely, lieutenants) whose judgment they trust.

Just as it's hard to imagine a chief financial officer who can't read a balance sheet, it's tough to picture a CIO who lacks at least



boilerplate knowledge of IT. But perhaps the role has broadened to the point where technical understanding isn't the primary criterion for landing the position.

### OLD DOGS

LINDA A. ROSSETTI IS CEO OF eMAVEN INC., A BOSTON-BASED company that consults with large businesses about their online strategies. Until recently, Rossetti says, the attitude of IT departments was, "If you ask me the right question, I'll tell you the right answer."

Cherri M. Musser, CIO at eGM, a division of Detroit-based General Motors Corp., agrees. "A lot of times, businesspeople

# DISSATISFIED

with the bang for their IT investment buck, some CEOs are giving CIOs with different strengths a try.

tell you the symptoms," Musser says. "If you don't understand the underlying business needs, you may go off and code or buy a packaged application" that addresses the reported symptoms but fails to solve the larger business problem.

That won't cut it in an e-business world, experts say. Today's CIO must anticipate the question, figure out what the business executives really want to know (for instance, when the marketing department pleads for more clickstream data, what they really want is more information on customers and prospects — and finding this information may have little to do with the clickstream) and even help answer questions the rest of the board would have never raised.

According to Chet Bloom, an account manager at New York-based recruiter Carlyle Consulting Services, most technologists lack some skills that are crucial for today's corporate officer: the ability to negotiate, communicate and delegate. "[Techies] are intellectually far superior," Bloom says. "But you get them on the phone, and they're socially inept."

It's clear that over the past five years, the IT department in general and the CIO in particular have made great inroads in the corporate mind-share department. It wasn't so long ago that many business executives questioned the very need for a CIO — as long as the company was making payroll and churning out the needed reports, the grumble went, what was the big deal? Why did that quiet guy from the data processing department need to be a chief all of a sudden?

But then came electronic data interchange (EDI), which boosted the value and prestige of information — even to those who had remained blissfully unaware of the shifts brought about by client/server computing. Hot on the heels of EDI was the World Wide Web, which demanded an online presence of at least some sort. The floodgates were opened, and a tumble of IT-related issues — customer relationship management initiatives, Y2k, online exchanges that offer opportunities to reduce supply-chain costs, a drive by many businesses to run the entire enterprise off a single database — made it clear that having a board-level executive in charge of technology was mandatory.

For obvious reasons, the overwhelming majority of CIOs have risen through the IT ranks. One of the most important

chores of CIOs in their brief history thus far has been understanding and explaining technology to other executives, especially the CEO.

But that's changing. "How does it work?" is an obsolete question. Now and in the future, "Can it get us where we need to be?" is much more important. And this is where many CIOs fall down.

"A lot of CEOs over the past 15 years have been frustrated by what they're getting out of IT," says Dave Caruso, an analyst at Boston-based AMR Research Inc. "They understand the value of technology. They've spent tens of millions, or even hundreds of millions, on IT." And they're not satisfied with where the investment has gotten them. Why? The classic IT guys, Caruso says, "focus on the technology and . . . have difficulty translating the investment into language execs can understand."

CIO Kaplan calls this "the accidental arrogance of the [IT] practitioners — they know how the stuff works but don't have a clue how someone's going to use it."

## FIRST ACT

THE SHIFT AWAY FROM HARD-CORE TECHNOLOGISTS IN THE CIO's office is in its early stages. EMaven works with dozens of Fortune 500 companies in different industries, and Rossetti says she can't think of a single non-IT CIO. Caruso agrees that at this stage, it's rare to see a former business or marketing executive stamped with the actual CIO title. Tim Peacock, vice president of development at Woburn, Mass.-based Intranets.com, a services firm for small businesses, has an extensive technology background and says that as far as he knows, almost all his peers do, too. "I haven't bumped into a CIO without an IT background," Peacock says.

Early though it may be, Caruso insists, "Non-IT execs getting into IT management is a definite trend." He adds that the need to do business online is a major driver. "AMR estimates that over 50% of the Fortune 500 have e-business VPs who get pulled right out of [a line of business]," he says, adding that it's only a matter of time before more "e-business execs get pulled from the ranks to be CIO."

Carlyle Consulting's Bloom says the top CIO candidate for a "major client" (which he declines to name) is a business analyst.

The candidate's experience is in finance, not technology. But he's attractive, Bloom says, because he brings sales and marketing experience to the table and knows networking — with people, that is. Companies are "looking for people with good communication skills," he says. "They can train them technically."

Rossetti says regardless of what goes on a technology officer's résumé, "there's a changing role for the CIO. Historically, they've been a leader in an internal customer service organization. There was nothing about partnerships." Now there most emphatically is.

One CIO who lacks an IT pedigree agrees that while the tech officer's role is changing, traditional CIOs (CIO Classic?) are

keeping up. Mark Millan, chief technical officer at WorldAG.net, an agriculture exchange portal set to launch this spring and based in Sonoma County, Calif., has a background in publishing and marketing.

"In the past," Millan says, when he wore the marketer's hat, "I worked with CIOs. They were historically very linear. They weren't always looking at the big picture. But that's changed in the past two or three years."

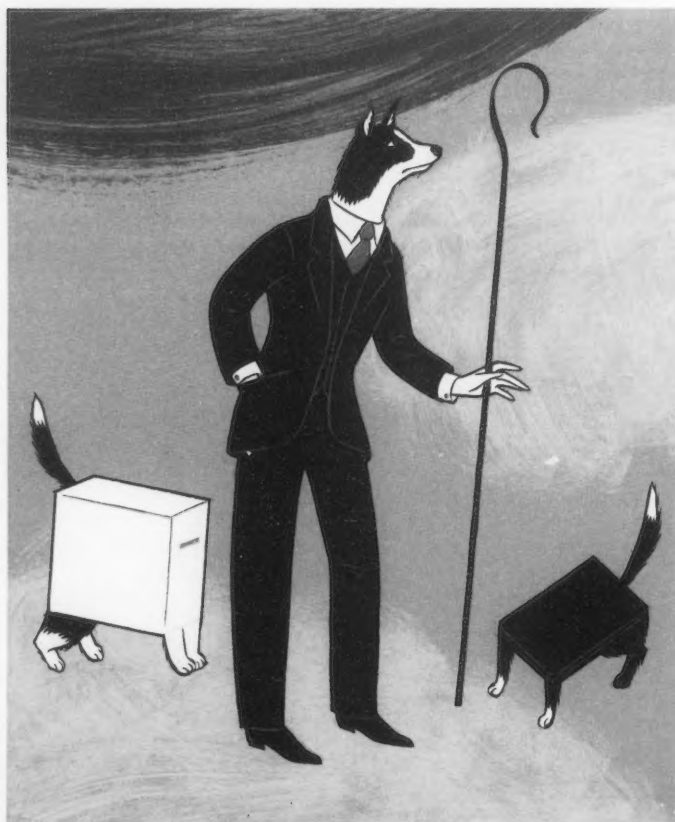
## NEW TRICKS

WITH TECHNOLOGY MORE IMPORTANT THAN EVER, AND WITH SO many interdependent decisions facing the IT department —

infrastructure, packaged applications, systems integrators (and other potential partners), outsourcing and application service providers, to name a few — why would organizations consider naming a CIO who lacks heavy technology knowledge?

As discussed earlier, many CEOs are dissatisfied with the bang they've received for their IT investment buck. Some are willing to take a chance, to try a CIO who brings different strengths to the table. And the most sought-after strength, by far, is the ability to view IT not as an end, but as a means to accomplish business goals. Remember Rossetti's line about old-line CIOs: "Ask me the right question, and I'll tell you the right answer." The mantra for New Age CIOs, meanwhile, is, "Tell me where the organization needs to go; I will use IT to help us get there."

Millan says IT "isn't just about automating processes, it's about serving the customer in a 360-degree manner." To many IT veterans, that may sound like typical marketing fluff, the vague pie-in-the-sky stuff that makes hard-nosed programmers roll their eyes



# NON-IT CIOs, experts worry, are more likely to be bamboozled by vendors' and systems integrators' sales pitches.

in team meetings — which is exactly why Millan is a chief technology officer.

Creating a technology landscape that can serve customers in a 360-degree manner is an example of what CEOs seek from today's CIOs. With his marketing background, Millan says, he's "really in business to serve other people. That's fundamental for me. I'm always thinking, if I'm a customer, what do I want?"

Musser has a well-informed perspective on the challenge for New Age CIOs; she boasts extensive experience in both IT and business. And in addition to her CIO title, she is the division's process information officer of supply chain. "CIOs have always needed a good sense of business," she says. "After 10 years [working at Texas Instruments Inc.], I went back and got an MBA because sometimes [without business experience], I couldn't ask, 'What are we really doing here?' " IT managers, Musser says, can develop tunnel vision: "You're doing what you're told. You can get enamored with the technology."

Like Musser, Don McNamee might be considered a crossover CIO. As top technology executive at Lexmark International Inc., a Lexington, Ky.-based printer manufacturer, McNamee has a straightforward IT background but has thrived as a business-focused CIO. Why? "I found out the hard way," McNamee says. "I watched my bosses throughout my career. The ones who succeeded were seen [by other executives] as businesspeople. The ones who failed were considered the techies behind the black box."

These observations taught McNamee what he calls a "simple formula: You find out what are the business priorities and those metrics that the business values, then focus your IT priorities on that. Establish a dialogue with the major business players in the company; get them to see IT as a partner." And when talking with fellow executives, he says, "my conversation is rarely sprinkled with techie stuff. I never talk MIPS and clock times — you talk about how to add value to the business."

## THE BIG DRAWBACK

WE KNOW THAT NOT EVERYONE APPROVES OF NON-IT CIOs. "Anyone with an MBA can't just run an IT department," says Intranets.com's Peacock. "Any manager needs a functional under-

standing of what people [in his department] are doing, and in IT, the ante [for developing that understanding] is pretty high."

Musser, McNamee, Peacock and other business-savvy CIOs with traditional technology backgrounds have a secret weapon: After communicating with fellow executives on a business level, they can fall back on their deep IT knowledge when it's time to make the magic happen. The same can't be said for CIOs who are pulled from the marketing department or a line of business, and that is their glaring weakness. To their credit, they freely acknowledge this and take steps to make up for it — usually by surrounding themselves with IT experts.

"I have the mountain of my own ignorance to scale," Turkel Schwartz's Kaplan says. "I'll be outengineered all day long."

Experts' biggest worry about non-IT CIOs is that they're more likely to be bamboozled by vendors' and systems integrators' sales pitches. "Somebody has to be able to say, 'No, we can't do that,' even though a vendor just described the [allegedly] perfect solution," Rossetti says.

McNamee agrees, saying vendors "will come to you with the great solution in the sky, which will solve everything including toothaches. If you don't have your [service-level agreements] and metrics in place, you will get burned." But the same issues face even the techiest CIOs, he adds, in an increasingly fragmented IT world in which it's impossible to be an expert on everything.

CIOs who lack a technical background must take extra pains to have lieutenants they can lean on. "I have about three people who translate for me," says WorldAG.net's Millan. "I rely on members of my technical team. They just plain know a lot more than I do." Kaplan, too, says he relies on specialists for advice and is "trying like hell to hire a right-hand man" with a thorough understanding of a broad range of technologies.

Right now, corporations appear to be willing to overlook a lack of technology know-how as they seek to weave IT closer to the fabric of the business. IT professionals with an eye on the CIO's office might think hard about going after an MBA or some serious business experience; multitalented executives will soon be much sought after. "The real trick," Peacock says, "is to find people with IT backgrounds and business backgrounds." ROI

More than half of all sales force automation initiatives bomb.

The fault lies not with the tools but with management's inability to tailor them for this unique set of users

# Failing to Construct the Seller

BY SEAN T. KELLY

ARE YOU INTERESTED IN TURNING YOUR COMPANY'S SALES FORCE INTO A DYNAMIC BUT unified selling machine that's as coordinated and assertive as a colony of amped-up army ants? Consider these facts: ■ 1. There's no shortage of companies that want to help you. Analysts estimate that sales force automation now represents a \$3 billion to \$6 billion industry with products from more than 500 companies, many of which have long histories designing sales processes, customer relationship management, Web contact management and other sales-oriented tools and services. These companies include Front Range Solutions Inc., Oracle Corp., Saratoga Systems, Siebel Systems Inc. and Vantive Corp. ■ 2. The results can make you a hero. Successful integration of sales force automation technologies has reportedly helped companies outsell their (non-sales-force-automation) rivals by as much as 50%, cut sales cycles in half and work more effectively across traditional enterprise boundaries, all while reducing sales costs. ■ 3. You're likely to (a) fail, (b) lose millions of your company's dollars in the process and (c) need a new job. ■ 4. Read No. 3 again. ■ 5. There is good news: Failure is avoidable.

But failure is avoidable only if you understand why it's so common.

AND JOHN A. BARRY

PHOTOGRAPH BY JANA LEON



## Looking Under a Rock for an Elephant

CONSERVATIVE ESTIMATES SUGGEST THAT AT LEAST HALF OF ALL sales force automation implementations have either failed or inhibited the sales force's performance in some way. Some estimates indicate, however, that as many as 70% to 75% of companies that undertake a sales force automation implementation won't see the results they hope to realize.

Despite the availability of high-quality software, companies all too frequently lack the commitment, organization and follow-through to see a sales force automation effort through to measurable success. Instead, millions of dollars' worth of new hardware and software tools often go unused.

Erin Kinikin, an analyst at Cambridge, Mass.-based Giga Information Group Inc., claims that most of the companies she works with are "on their second or third [sales force automation] vendor — and looking for another one. [This] spending in Fortune 5,000 companies [and in opportunity-driven industries] runs in the millions of dollars per company, without showing clear benefits."

So what's wrong with sales force automation technology? Well, nothing, really. And there's the rub: Companies all too often blame such tools for sales performance inadequacy, when they should be looking elsewhere for the problem. "The tools, as good as they currently are, are often retrofitted into a poor sales process," says Scott Sims, a partner at the Chicago office of Arthur Andersen LLP's channel and customer solutions business.

Kinikin agrees. "It's increasingly difficult to blame technology for project failure," she says. "Companies have to start looking in the mirror and addressing the fundamental organizational and people issues that make sales force automation [or optimization] valuable."

## Botching the Deal

IN A TECHNOLOGY INDUSTRY RULED BY STANDARDS, SALES FORCE automation defies certain laws of operation. While many companies can slap accounting and manufacturing software into existing environments, that's not so easy to do with sales force automation. Each company operates its sales efforts differently, so prepackaged software can't solve specific problems. That forces companies to evaluate individual sales processes, admit to breakdowns and then — and only then — customize sales force automation tools to meet their unique process and people needs.

Jim Dickie's Boulder, Colo.-based company, Insight Technology Group (ITG), spent two years reviewing hundreds of sales force automation initiatives for its 1999 research report "Towards Sales 2000 — Reengineering the Way We Sell." It identified the pitfalls that commonly prevent companies from yielding significant sales process improvements. All of them centered on process, commitment levels and communication problems. For example, ITG found that companies frequently do the following:

- Concurrently develop sales force automation components in separate departments, without parameters. The result: incompatible systems.

Dickie points to an East Coast-based Fortune 500 manufacturer that compiled a complex set of tools that included Mehta Corp.'s Markettrieve for sales force automation and marketing, telemarketing software from Brock Control Systems Inc., Symantec Corp.'s ACT for field sales, Corel Corp.'s Paradox for customer relationship management, Oracle Financials for finance and

accounting and an internally developed system for product support. Each product addresses a specific need well, he says, but when combined, they may create more confusion than efficiency for a sales force.

- Cut corners by applying old

hardware and software to new problems, which leads to poor performance, sales force frustration and rejection of new systems.

- Get spooked by per-user costs, which often reach \$15,000 to \$17,000 for the entire life cycle, even if those costs are recovered in a matter of months in addition to exponential gains.

- Undercommit to sales force automation projects by using Band-Aid fixes that only further complicate existing processes, rather than generating new, improved methods.

- Pursue sales force automation with a "part-time" attitude. When IT is encouraged to do some user-interface work in its spare time, when the marketing department is solicited only for occasional feedback and when salespeople are rarely invited to input meetings, unfinished projects are usually the result.

- Never get complete buy-in from senior executives, which results in difficulty communicating sales force automation goals across functional areas, managing internal problems (like politics), resolving problems with conflicting business goals and so on.

Although each company and its structure differs, the point is that companies should, but frequently don't, do the necessary internal evaluation work required to successfully match their individual sales process rules with sales force automation tools.

**Companies blame** sales force automation tools for sales performance inadequacy, when they should be looking elsewhere for the problem.

## Stick With It or Get Stuck With It

At the first sign of trouble, many companies bag their sales systems

**S**URPRISINGLY, EVEN AFTER PROCESS, TECHNOLOGY, AND EXECUTIVE and sales staff buy-in problems are resolved, sales force automation initiatives still have a significant chance of failure.

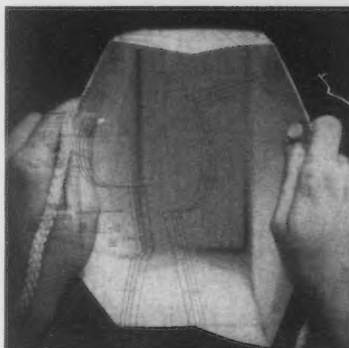
Why? Experts and practitioners believe companies either give up on automation too early if they don't see immediate results or simply allow these projects to fade into the background once they're in place.

"We frequently see companies give up on a new[sales force automation] implementation if they don't meet their sales objectives by the close of the next quarter," says Scott Sims, a partner at Arthur Andersen's channel and customer solutions business. "They don't realize that [this technology] isn't a short-term shot; it may take two years to see the real bottom-line value of a new system."

If companies don't give up entirely on a new system, they often make the mistake of giving up on its maintenance and assume that the money's spent and what's done is done. ITG's Jim Dickie, whose research confirms that companies far too often back off at the first sign of trouble, says sales force automation initiatives get ugly early because of variables such as a lack of formal training for new employees, inadequate system administration and support, and a lack of continual system upgrades and enhancements.

"Sales re-engineering is not an event; it's an ongoing process," says Dickie. "Failing to plan and budget for additional functionality to [sales force automation] programs or upgrading hardware or communications capabilities will result in [these] systems becoming obsolete in just a few years."

— Sean T. Kelly and John A. Barry



### Power to the (Sales) People

JUST AS COMPANIES CAN FOCUS TOO HEAVILY ON TECHNOLOGY and too little on processes, they can also focus too heavily on both of those aspects and yet leave their salespeople out of the equation. This may sound silly, since improving a sales force represents the overall goal of sales force automation tools. But, according to Arthur Andersen's Sims, companies that get overly infatuated with designing sales process and automation systems forget to ask one of the most obvious questions: "Will our salespeople use it?"

"If you're a salesperson, your intent is to make your wallet fatter," says Sims. "No matter how simple or fancy a new system may be, salespeople will still ask, 'Will it help me sell more?'"

According to Dickie, every salesperson needs to answer that question with a resounding yes.

"As soon as [a company] lets a single person get away with not using the system because it's too hard, they haven't had time to get used to using it or they are personally more productive doing something else, the foundation for the project will start to crumble," he says.

When company executives include sales staff in sales force

automation interaction design processes (so the system is easy to use for both IT and sales staff), thoroughly explain the benefits and remove the common fear that the system is really just a "Big Brother" way to monitor a sales force's every move, salespeople will be more likely to confront change and adopt new routines.

But Kinikin points out that sales force automation frequently requires "too much input for too few benefits." Clearly, a firm must balance how much time its sales force spends on the design and planning process with the amount of time it spends performing its main tasks: selling products and interacting with customers.

Surprisingly, according to Sims, some organizations even neglect to do this while implementing, and even upon completion of, a new sales force automation system.

"We've seen companies assume — based on a good vendor demo — that new [sales force automation] technology will automate the entire process, including customer communications. But some things just cannot, nor will ever be, automated," says Sims. "In the end, no matter how sophisticated the [sales] technology a company uses, it's still the handshake that defines the customer relationship."

ROI

**Dot-coms dropped the ball, but the lessons they taught  
are keeping e-business on a roll. In fact,  
a fresh focus on technology's ability to drive new revenue  
is putting bounce in the industry**

**D**OES THE DEMISE OF SO MANY DOT-COMS SPELL THE END OF E-BUSINESS? IN A WORD, no. In fact, we remain steadfastly on the path of the greatest business transformation since the Industrial Revolution, and, ultimately, we'll thank the failed dot-coms for serving as the catalyst.

But first, let's agree on some terms.

A dot-com is a venture capital-backed start-up that uses Internet technology to dethrone traditional players in an industry. Think of consumer e-commerce titan Amazon.com Inc.'s challenge to venerable booksellers like New York-based Barnes and Noble Inc. And let's not forget business-to-business dot-coms, like San Jose-based Neoforma.com Inc. This upstart received more than \$80 million in financing to create an Internet marketplace to take on the \$140 billion hospital supply industry.

E-business, in contrast, goes well beyond applying Internet technology to existing retail, distribution or other business models. Instead, it requires broad-scale asset redeployment and process changes, which ultimately serve as the basis for a company's competitive advantage in the Digital Economy.

**BY LINDA A. ROSSETTI**

San Jose-based Cisco Systems Inc.'s use of the Web to manage its supply chain is a prime example. The company reported that its e-business model more than halved cycle times, plus saved another \$170 million in material and labor costs.

Similarly, Charles Schwab & Co. in San Francisco has slashed transaction costs by as much as 80% by shifting brokerage transactions from traditional channels like retail and phone centers to the Internet.

Most pure dot-coms, in contrast, haven't fared nearly as well. Last year alone, 140 dot-coms failed, according to San Francisco-based Iconocast Inc., which tracks Internet start-ups. Yet there are several significant lessons that traditional companies looking to launch or grow e-business initiatives can learn from these fumbles.

**PHOTOGRAPHS BY VITO ALUIA**



THE  
BIG  
BOUNCE

### Lesson No. 1:

It's all about business. Always has been, always will be.

THERE'S A SCENE IN THE MOVIE *TITANIC* WHEN THE SHIP'S CAPTAIN asks about the stricken ocean liner's likely fate. The ship's builder answers that there is nothing to be done: It will sink. "It is a mathematical certainty."

Early on, we used similar "mathematical certainty" methods to focus Fortune 1,000 executives on the business fundamentals required to succeed in the Digital Economy.

To illustrate, consider this hypothetical case: A Web retail start-up, Shirt.com, seeks to generate \$300,000 in sales in its first year. If the company realized average transaction value of \$30, it would need to close 10,000 transactions to generate its target \$300,000 in revenue. These 10,000 transactions would be a function of the Web retailer's conversion rate — the percentage of visitors who actually purchase something. In the past 24 months, e-commerce sites experienced an average conversion rate of 1%. That means Shirt.com would need to attract 1 million visitors to reach its first-year revenue goal.

Let's further assume that Shirt.com relied solely on online advertising, like banner ads, which have a 1% to 2% click-through rate, to drive traffic to its site. With that click-through performance, the company would need to purchase between 50 million and 100 million ads to net its 1 million visitors. At an average cost of about 3 cents per banner ad, it could cost as much as \$3 million to generate modest sales of \$300,000. Layered on top of that would be another \$3 million in expenses for things like site development, maintenance and the cost of goods sold. The example is oversimplified, but you get the point.

Don't be dismayed. Business fundamentals aren't meant to deter valuable investment in new digital channels, like the Internet or wireless commerce. Rather, fundamentals play a pivotal role in preparing companies for leadership. A focus on business fundamentals drives an integrated results-oriented approach critical to leadership in an e-business arena.



### Lesson No. 2:

It's also about relationships, *not* transactions.

FORGET TECHNOLOGY'S GEE-WHIZ FACTOR AND FOCUS INSTEAD on its role in advancing relationships, from customers, employees and suppliers to business partners and shareholders.

Consider GE Aircraft Engines (GEAE), a division of Fairfield, Conn.-based General Electric Co. that launched a customer Web site in January 2000. This private, password-protected site, also known as an extranet, can be accessed by GEAE's customers. Using the extranet, big customers like Atlanta-based Delta Air Lines Inc. and Houston-based Continental Airlines Inc. can electronically place orders for more than 250,000 parts, check inventory, pay bills and even view pictures of ongoing repairs and maintenance.

Sure, GEAE's customers can buy parts online — recall the "transaction mantra" of the dot-coms. But even more important, every time a customer logs on to check inventory or review invoices, GEAE gains additional business value measured in reduced cycle time for critical parts and lower costs to service customer orders.

GEAE also increasingly tightens its relationships with its customers. For example, data available on Delta's private Web page at GEAE enables Delta executives to make informed decisions about how and where to stock aircraft replacement parts to minimize flight cancellations resulting from maintenance problems. Major U.S. airlines typically stock between 150,000 and 300,000 aircraft parts, which cost \$800 million to \$1.5 billion annually to warehouse. Under GEAE's e-business model, Delta's ability to maintain jet engines in a cost-effective manner will become more and more reliant on the information, services and knowledge provided to the airline via its supplier.

At GEAE, the extranet brought in more than 10% of the company's \$10.7 billion in 2000 revenue. In addition, GEAE expects that cost savings will tally \$100 million. Perhaps even more meaningful is that, thanks to new selling tools and techniques built into the Web site, GEAE expects to bring in an incremental \$1 in revenue for every \$4 of customer transactions it converts from the physical world to the Web site.

The bottom line: E-business value is created when companies continue to advance valuable relationships while converting all or some of those relationship steps into a digital format.

### Lesson No. 3: Real business value goes beyond cost savings.

THERE IS NO TURNING BACK FOR COMPANIES THAT HAVE ALREADY reaped the financial benefits of e-business. Charles Schwab, for example, cut costs by more than \$400 million in 1999 — approximately 10% of its revenue — by shifting physical-world transactions to online.

The next step for companies and their customers is to change the terms of competition. Self-service applications are a prime example. If you're selling a potential customer on your manufacturing capabilities, don't be surprised when the customer's evaluation of your capabilities stretches to your company's Web-based ordering, tracking and customer service capabilities. The reason is that if you haven't invested in these applications, your customers' cost of doing business with your company increases.



### Lesson No. 4: Today's customer data is tomorrow's competitive corporate asset.

REALIZING FINANCIAL RETURN ON INVESTMENT ALONE DOESN'T guarantee e-business success. Dot-coms have also taught us the extraordinary value of new assets created in a Digital Economy.

A prime example is Seattle-based Amazon.com's customer database, which the dot-com wisely leverages to drive new revenue by presenting return customers with personalized suggestions of books and music to buy. The assets created by e-business, be they a customer database like Amazon's or the engine performance database developed and shared within GEAE's extranet, are the new jewels of the E-Business Age. IT is at the core of these new assets, which is why technology decisions made today will position the leaders of tomorrow.

E-business isn't just another flavor-of-the-month craze, like total quality management. Despite the battle wounds inflicted by these well-intentioned business fads, we can safely say e-business represents the most significant change in more than a century. Remember Henry Ford and his production line? When, since then, have we seen 10% shaved from the cost structure of a Fortune 50 corporation like Charles Schwab?

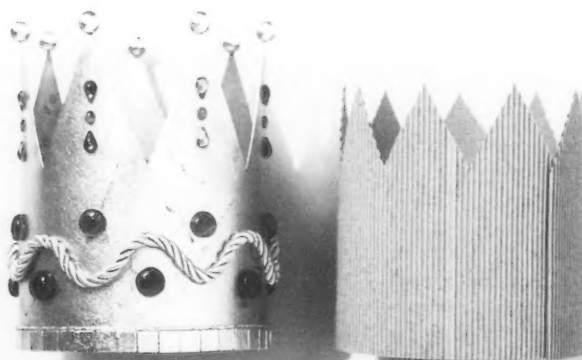
Ultimately, the dot-coms should be thanked. They made the world pay attention to the extraordinary business potential of a new communications technology. What remains to be seen is how well companies translate their early e-business lessons into greater cost savings and ongoing competitive advantage.

ROI

**ROI ONLINE** For more lessons learned from dot-coms, click on "Autopsy of a Dot-com" at [www.computerworld.com/roi](http://www.computerworld.com/roi).

# The Kingdom of B2B

*Listen skeptically to e-commerce naysayers* BY MARK HALL



**W**HEN KING LOUIS XIV WAS LOOKING FOR A SENIOR adviser, he tested the leading candidate, Nicholas Fouquet, not for his knowledge but for his honesty. France's new ruler asked Fouquet to give him an assessment of the government's revenue and expenditures. Fouquet underreported the nation's income and overstated spending. Louis discovered the deception, which is why it's John-Baptiste Colbert who's remembered as a key contributor to the strategy behind the Sun King's reign.

The moral? Honesty is the best policy. Sure. But the real moral? Never undersell the basis for the future.

Fouquet wanted the same things as Louis and Colbert — glory and riches for France. But given a tight budget and an inexperienced king, he thought it prudent to go slowly. He was wrong.

Keep Fouquet in mind as your right-hand adviser gives you the bad news about business-to-business marketplaces. Despite the chatter (more than 1,000 were launched last year), these exchanges do very little, and what they do is incomplete.

Once you strike a deal on a B2B exchange, you must back out into multiple proprietary, intracorporate, paper-inspired systems to consummate the agreement. For example, a \$10 million order to an Asian manufacturer can't be insured or financed in a B2B exchange, something that

would be de rigueur in the real business world. That's beginning to change with the likes of *The Hartford Financial Services Group Inc.* and *Marsh Inc.* stepping gingerly into the market with integrated services. But exchanges remain yet another source for more FedEx packages and faxes.

In truth, a B2B exchange's immediate benefit is as an effective procurement tool, something along the lines of a Web-ready, industry-specific *Thomas Register*. A very good thing. But not a very big thing. Don't expect to use your B2B exchange strategy to turn your company around.

That said, when your trusted adviser is giving you the lowdown on your B2B situation, listen carefully. Is it Fouquet talking or Colbert? Is the advice notable only for dwelling on the shortfalls of B2B? Or is your adviser telling you that it's inevitable that your online B2B supply-chain operations will continue to get more intricate as you increasingly leverage the Internet? That as your B2B complexity rises, your company's future will eventually depend utterly on B2B complexities? And that the decisions you make now will set you on the right or wrong path? That's the advice you should be getting . . . or giving.

B2B procurement exchanges are only the first baby step. The Colberts of the world know this and will use exchanges to make business history. The Fouquets of the world will simply be history.

ROI

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# Leaders in the Rough

*How to identify people who can take the wheel* BY GUS TAI

**V**ENTURE CAPITALISTS CONSTANTLY HAGGLE about whether it's great management or a great market that makes or breaks an investment. That's like asking which is more important for survival: air or water. In the case of a young company, management and market opportunity are equally important for long-term success. But the biggest challenge is identifying great management.

There are nearly 10 times more start-ups funded today than three years ago, meaning many are led by entrepreneurs who don't have direct, relevant experience. As a result, the mechanisms for evaluating leaders — checking their track records and references — while still valuable, aren't always applicable. So to help assess leadership capabilities, here's a list of personal attributes essential for building lasting companies.

**INTEGRITY** It's virtually impossible to lead successfully without it. Leadership demands that ethics come without compromise.

While it's hard to measure integrity, it's easy to spot indicators of its absence. Red flags appear when CEOs evade tough questions or seem willing to morph into what they think you want them to be. I look for an unshakable resolve and a willingness to be open and direct. Times of crisis are often the best test.

James Burke's leadership at Johnson & Johnson during the Tylenol scare is an excellent example of ethics without compromise.

**HIGH EMOTIONAL IQ** Good CEOs fundamentally understand that people are the company's greatest asset. They truly listen. And they take the time to

regularly communicate to the team how the company is doing, where it's going and how they plan to get there. High emotional IQ goes a long way toward building a motivated and hard-working team. Sasa Radulovic, CEO of an early-stage company called TrueSpectra, has been able to build a strong team-based culture, thanks to his keen listening skills and ability to combine people's strengths.

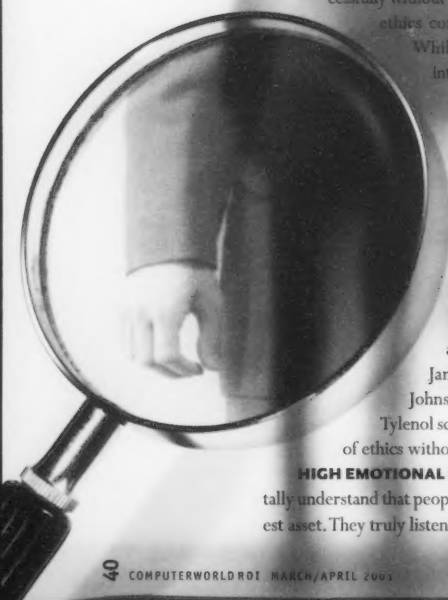
**POSITIVE OUTLOOK** Much can go wrong in a start-up, and often does. The most successful leaders have a natural positive outlook about the challenges. This attitude creates the energy necessary to overcome obstacles. CEOs who see the cup as half empty often create a downward spiral in difficult times. By contrast, Starbucks CEO Howard Schultz's positive outlook helped inspire those around him in the midst of challenging operational complexities and many doubters.

**DECISIVENESS** Without decisive leadership, companies can quickly become paralyzed. The vacuum created by indecision breeds internal politics and individual agendas. The decisive CEO faces tough choices head-on, weighing options, determining a course of action and moving forward with confidence. Clarity of thought and articulation of clear goals are early signs of a decisive leader. Think General Electric CEO Jack Welch.

**TALENT MAGNET** Strong leaders aren't afraid to surround themselves with exceptional people. When taking a chance on a new entrepreneur, evaluate whether he has recruited a first-rate team capable of building a sustainable business. Assessing the caliber of his advisers is another gauge of his ability to attract talent. Cisco CEO John Chambers is well-known for retaining the best and the brightest with each acquisition the company makes.

There's no shortage of innovative ideas and solid business plans. The scarcest resource is people. Entrepreneurs who possess these leadership qualities are far more likely to deliver success to the company, employees, customers and investors.

ROI



# Windows 2000 ADVANTAGE

The Web Magazine for IT Leaders Implementing Windows 2000 and Windows NT with Compaq Services and Solutions

## Online this week:

### POINT OF VIEW

Compaq Integration2000 delivers enterprise e-commerce solutions

Integrating enterprise applications recently got a boost with Compaq's Integration2000. The initiative helps solve the largest, most difficult business integration problems.  
[www.windows2000advantage.com/pov/12-11-00\\_integration.asp](http://www.windows2000advantage.com/pov/12-11-00_integration.asp)

### TECH EDGE

Windows 2000 enhances storage management, disaster recovery

Microsoft Windows 2000 features that fine-tune how information is stored, distributed, backed up and recovered in an enterprise-class data center are making life easier.  
[www.windows2000advantage.com/tech\\_edge/02-05-01\\_disk\\_disaster.asp](http://www.windows2000advantage.com/tech_edge/02-05-01_disk_disaster.asp)

### Q & A

Aberdeen Group analyst says Windows 2000 ready for reliability prime time

Tom Manter, at the Aberdeen Group, finds that enterprise computing users increasingly choose Microsoft Windows 2000.  
[www.windows2000advantage.com/qa/01-29-01\\_aberdeen\\_reliability.asp](http://www.windows2000advantage.com/qa/01-29-01_aberdeen_reliability.asp)

### COLUMNS

The Windows 2000 tide is turning

After a rocky beginning, Microsoft Windows 2000 is coming around. How do we know? Because our readers are saying so.  
[www.windows2000advantage.com/columns/01-08-01\\_turning.asp](http://www.windows2000advantage.com/columns/01-08-01_turning.asp)

### CASE STUDIES

RadioShack, Starbuck's blazing Commerce Server 2000 trail

Before Microsoft's Commerce Server 2000 hit the street, it went through a beta testing trial. Two trials, RadioShack.com and Starbuck's were able to accomplish e-commerce goals.  
[www.windows2000advantage.com/case\\_studies/01-22-01\\_commerce.asp](http://www.windows2000advantage.com/case_studies/01-22-01_commerce.asp)

### NEWS >

Small Business Server 2000 offers large system functionality; early users report initial success

Based on Microsoft Windows 2000 Server, the all new Microsoft Small Business Server 2000 provides small businesses with up to 50 PC's a cost-efficient way to take advantage of Microsoft's .Net enterprise servers.

For the full story, visit:  
[www.windows2000advantage.com/news/02-26-01\\_small\\_biz\\_server.asp](http://www.windows2000advantage.com/news/02-26-01_small_biz_server.asp)

### COLUMNS >

Windows XP, a.k.a. "Whistler," impresses our reviewer

The recently unveiled Windows XP, which embodies the client-side version of the enhanced Microsoft Windows 2000 version known as Whistler, offers stability, power, flexibility and extensibility that home and business PC users will enjoy on their desktops or the internet. It also includes a slew of more glitzy capabilities that will allow these users to enjoy real-time voice, video and musical applications.

For the full story, visit:  
[www.windows2000advantage.com/columns/02-26-01\\_win\\_xp.asp](http://www.windows2000advantage.com/columns/02-26-01_win_xp.asp)

### FEATURES >

One year old, Windows 2000 is growing up fast

On its first birthday, Microsoft Windows 2000 has established itself as a staple in Web server environments, and is slowly making its way from the front end of IT shops to the back end of data centers. In the process, it's delivering significant savings and reliability and making life easier for users.

For the full story, visit:  
[www.windows2000advantage.com/features/02-19-01\\_birthday.asp](http://www.windows2000advantage.com/features/02-19-01_birthday.asp)

### ROUNDTABLE >

Windows 2000 users home in on desktop issues

At a recent Microsoft Desktop Deployment conference held in Denver, Colo., three attendees met with Windows 2000 Advantage managing editor, Stefanie McCann, to discuss deploying Microsoft Windows 2000 on the desktop. The enthusiastic participants quickly got down to business and said how impressed they were with the operating system's, security, and its overall reliability. The participants of the roundtable included: Travis Sanders and Donald Bizelli, systems analysts for WorldCom in Colorado Springs, Colo. and Frank Clark, CEO, Design Enterprises, Denver, Colo. and independent consultant.

**Q:** Did the conference deal mostly with deploying Windows 2000 on the desktop, or did you get into server deployment?

**Sanders:** We touched on server deployment just a little bit.

**Q:** When are your companies going to start migrating to Windows 2000?

**Bizelli:** There are rumors that we may start migrating as early as April.

**Q:** Is that just the desktop or server and desktop?

**Bizelli:** That is going to be the desktops to start with and then we'll migrate the servers.

For the full story, visit:  
[www.windows2000advantage.com/roundtables/02-12-01\\_users.asp](http://www.windows2000advantage.com/roundtables/02-12-01_users.asp)

### QUOTE OF THE WEEK >

"Everything I have touched, I have installed Windows 2000 on and I've beat the heck out of it. It is great."

— Travis Sanders  
systems analyst  
WorldCom  
Colorado Springs, Colo.

## What is Windows 2000 Advantage?

The mission of Windows 2000 Advantage is to become your primary source of timely, useful information for planning and implementing Microsoft Windows 2000 on Compaq solutions and services.

Windows 2000 Advantage is a Web-only magazine because that lets us bring you,

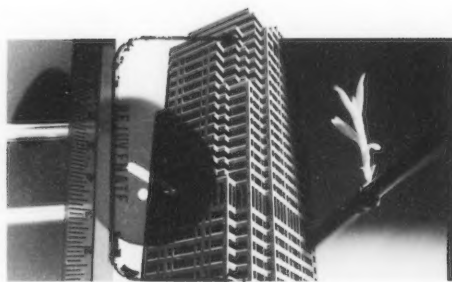
the IT leader, great stories that apply to your day-to-day work. We'll keep you up to date with a weekly e-mail alert so you don't miss a thing.

Windows 2000 Advantage is underwritten by Microsoft and Compaq. Its charter is to address the issues that most concern IT

managers charged with keeping their companies on top of the latest and best solutions Microsoft and Compaq have to offer. Toward that goal, we offer a wide range of stories including case studies, columns and news to provide you with information you can't find anywhere else.

**Microsoft**  
**COMPAQ**  
**COMPUTERWORLD**  
ENTERPRISE BUSINESS SOLUTIONS

[www.Windows2000Advantage.com/300](http://www.Windows2000Advantage.com/300)



## More stories online:

- How ROI grows with your company.
- American Express' chief privacy officer defends customers' rights.

## Coming in the next issue:

### Risking It All

Rather than trying to calculate specific returns on each project, some companies are saving millions of dollars a year through a "portfolio" approach to IT spending. We'll tell you how.

### The High Cost of Privacy

You've heard the horror stories. Four female employees sue for sexual harassment based in part on off-color e-mail jokes. The upshot: a \$2.2 million settlement. Here's how to keep it clean and keep it legal without going broke.

### Out of the Think Tank

As CEO of The Research Board Inc., Peter Sole commands the attention of a select group of the world's most influential CIOs, who turn to this intensely private brain trust for insight and peer networking. In an exclusive interview with *Computerworld ROI*, Sole talks about moving away from cost savings and toward speed, agility and innovation as key metrics for measuring the business value of new technology projects.

### Also coming in the next issue . . .

*Computerworld ROI* columnist Pimm Fox details how smart companies use IT projects to boost their profiles on Wall Street.

## A Note From Computerworld's New President

I HOPE YOU ENJOYED THIS PREMIER ISSUE of *ROI*. As a former CIO with a large global staff, I'm especially sensitive to what business leaders need when buying and implementing today's technologies. One of the most critical and elusive of these necessities is return on investment. Without a clear line of sight, it's nearly impossible to make sound and inspired technology decisions — decisions for which we are held accountable.

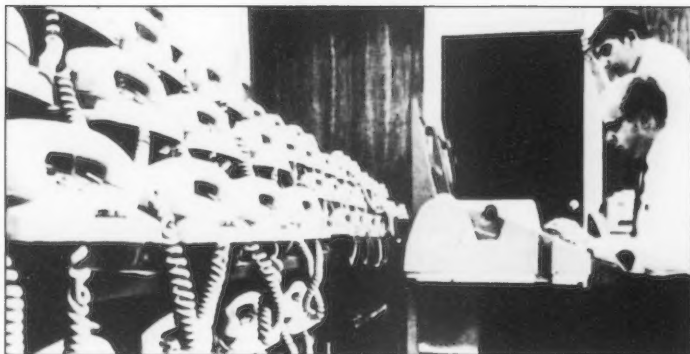


This issue of *ROI* is one in a series of new information products for business strategists and leaders. At *Computerworld*, we are committed to providing the insights and perspectives you need to succeed in a maze of claims and counterclaims, truth and vaporware.

We believe ROI starts with us — so the time you invest in our Web site and our newspaper should give you the very highest return. Visit [www.computerworld.com/roi](http://www.computerworld.com/roi) for additional resources on technology payback and, going forward, a community of business and technology leaders talking about the issues you face.

Today's dialogue on ROI will continue both in print and online. I invite you to e-mail your thoughts and comments, as well as suggestions for future stories, to [ROI@computerworld.com](mailto:ROI@computerworld.com).

Alan Guibord  
President, CEO and publisher  
Computerworld Inc.



*In 1969, we worked on a  
SECRET GOVERNMENT PROJECT  
that became the Internet.*

OHHH, SO THAT'S WHY NOBODY KNOWS WHO WE ARE!

Back in the '60s a small band of computer whizzes was hired by the Department of Defense to work on the ARPAnet. Or what is commonly known as the forerunner to the Internet. These visionaries came from the legendary research and development company, BBN.



Black Rocket is Genuity's eBusiness Network Platform.

Government work being what it is, there wasn't a lot of publicity about this.

Their work did, however, yield many firsts. The first router. The first e-mail message. The first network packet encryption technology and more.

Years later GTE acquired BBN and invested billions to expand their existing infrastructure into a 17,500-mile, Tier 1, fiber-optic global network.

Spun off from GTE last year, this powerhouse of Internet services is known today as Genuity. With Data Centers strategically located around the world and Network Operations Centers continually monitoring security and bandwidth for serious eBusinesses everywhere.

Innovation is in our blood. It is at the core of everything we do: Web Hosting, Internet Access, Transport and Security. And now we've combined our expertise in these four areas into an integrated eBusiness Network Platform called Black Rocket. The managed eBusiness solution from a single accountable source.

To put this kind of thinking to work on your eBusiness, visit [www.genuity.com/blackrocket](http://www.genuity.com/blackrocket) or call 1-800-GENUITY.

A BRIEF HISTORY



In 1969, BBN was hired by the U.S. government to develop the ARPAnet, the forerunner of the Internet.



In 1997, BBN was acquired by GTE, the company that created our high-speed, 17,500-mile, Tier 1, fiber-optic network.

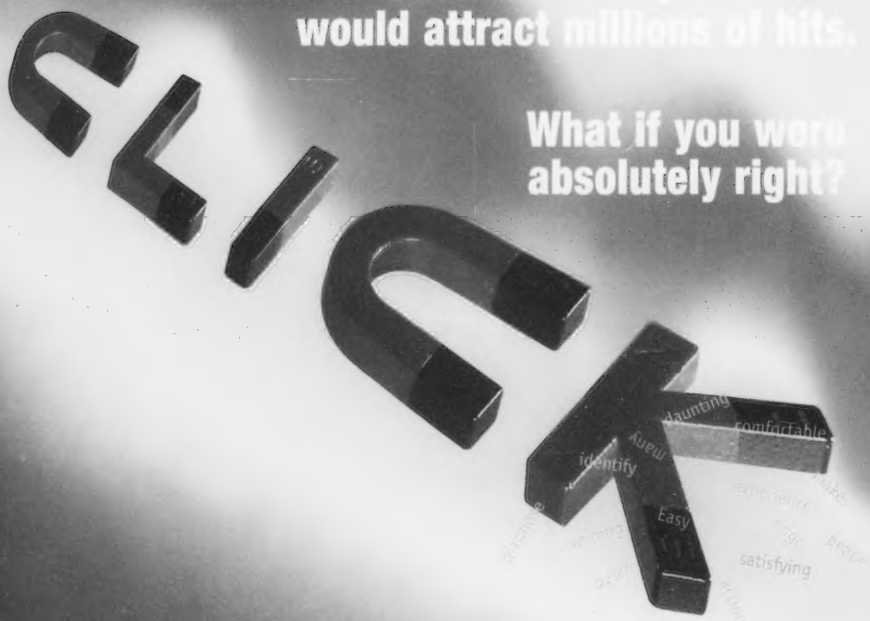
GENUITY

In 2000, GTE Internetworking became an independent company, renaming itself Genuity. Today, Genuity offers a vast array of managed Internet services, including Black Rocket.

GENUITY

You told the Board your site  
would attract millions of hits.

What if you were  
absolutely right?



Relax. The Tonic web applications management enterprise solution has arrived.

Suddenly the leading edge of e-business is a much more comfortable place to be. No matter how many customers you attract.

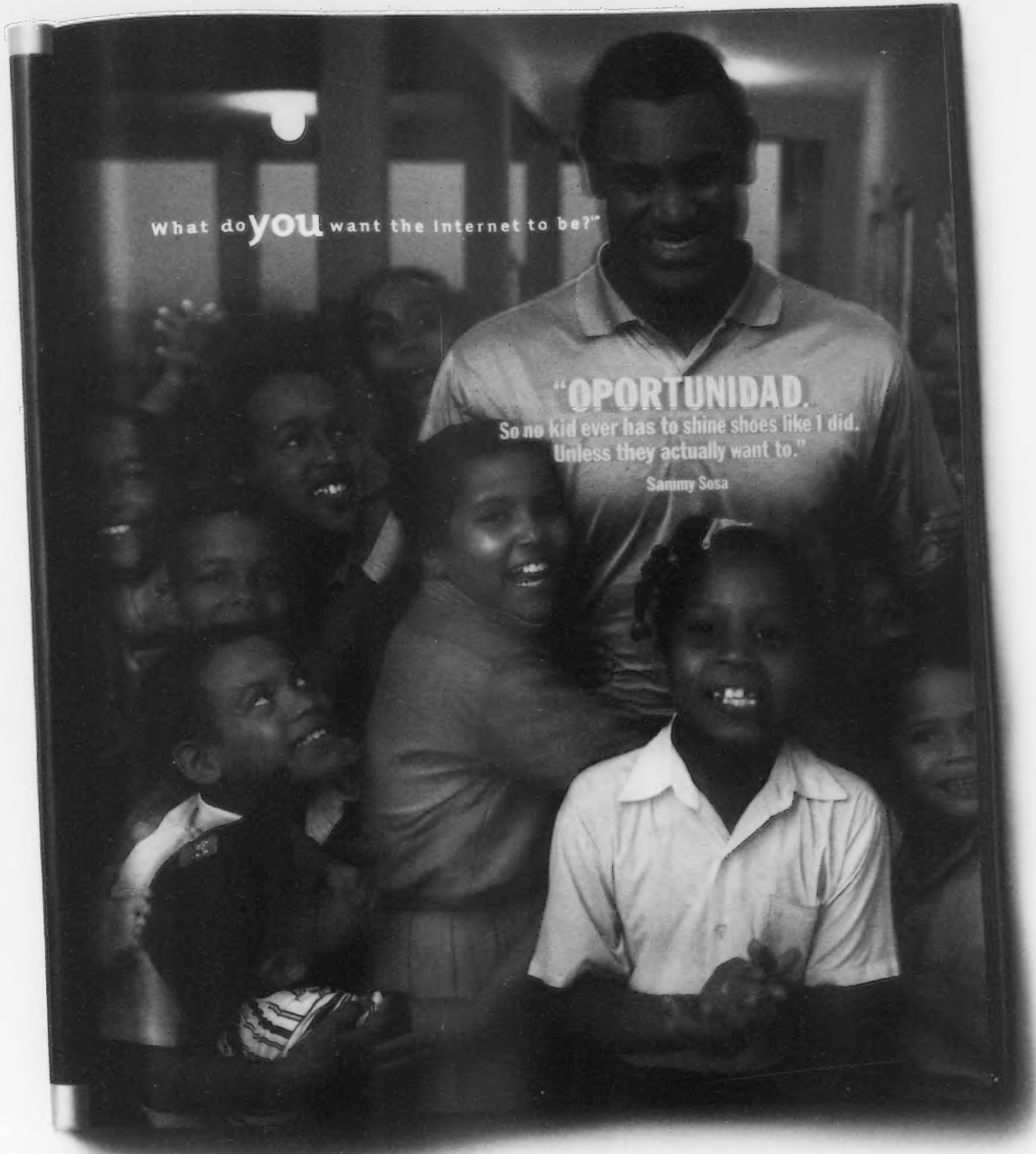
Tonic's ability to identify a web application problem before your customers do, diagnose the cause, and take automated corrective action — guarantees a satisfying on-line experience.

You'll have peace of mind in knowing that your site is available and performing at peak. That makes the e-world far less daunting. Even predictable.

Up and running in hours, not days. Easy to use with immediate results. That's Tonic. And that's better.  
[www.tonic.com](http://www.tonic.com)

**TONIC™**

Guaranteeing Your Net Works.™



What do **you** want the Internet to be?"

**"OPORTUNIDAD.**

So no kid ever has to shine shoes like I did.  
Unless they actually want to."

Sammy Sosa

**eBusiness**

Well, you've nailed another one, Señor Sosa. And with Nortel Networks™ Clarify™ portfolio of customer relationship solutions, opportunities abound in the world of eBusiness. It enables companies to integrate their sales, marketing and service capabilities with the new, high-performance Internet. Combining data and telephony networks into one Unified Network. And turning every point of customer interaction, from your Web site to call centers to data centers, into an opportunity for stronger, more profitable customer relationships. So come together, right now with Nortel Networks. And make the Internet whatever you want it to be. [nortelnetworks.com](http://nortelnetworks.com)

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	<b>Oracle9i</b> Application Server	<b>IBM</b> Websphere	<b>BEA</b> WebLogic
Dynamic Page Cache	●	○	○
Data Cache	●	○	○
Enterprise Portal	●	○	○
Java Server	●	●	●
Wireless	●	●	○
Clickstream Analysis	●	●	●
Enterprise Reporting	●	○	○
Ad-Hoc Query & Analysis	●	○	○
Apache Web Server	●	●	○
Directory	●	●	○

And we guarantee we'll  
run your web site at  
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